USER GUIDE

HAZOP Manager V7.0

An integrated Recording, Reporting and Action Tracking System for the management of Hazard and Operability Studies and other Safety Reviews

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The software is designed to operate upon current, as at the date of purchase, Microsoft Windows operating systems as specified in the installation instructions. It shall not be construed that the software is defective if it should fail to operate upon past or future releases of such operating systems.

CONTENTS

GUIDELINES FOR INSTALLING
THE HAZOP Manager V7.0 SOFTWARE

SYSTEM REQUIREMENTS

- The operating system should be Windows 2000, XP, Vista, 7 or 8.
- The target computer should have a 1 GHz or faster processor, with a 256 colour or greater display capability, and at least an XGA (1024 x 768) screen resolution.
- The minimum memory requirements recommended by Microsoft for each operating platform listed above will be adequate.
- For a stand-alone installation a minimum of 14MB of free disk space should be available.

GENERAL REQUIREMENTS

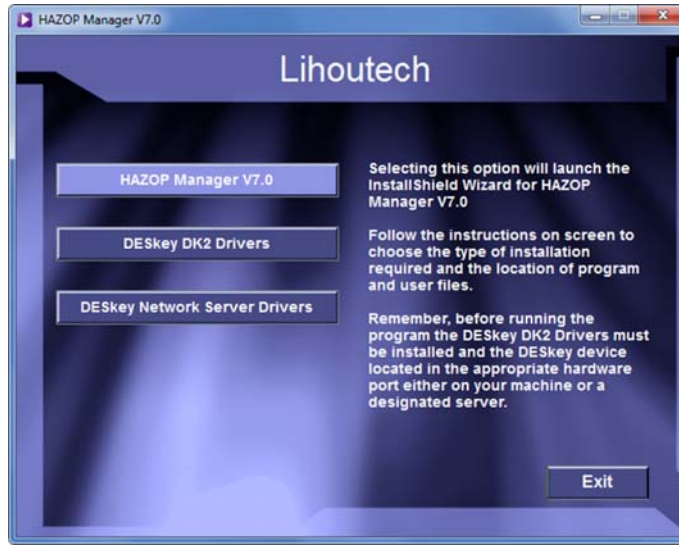
- The installation of the program will involve adding driver files to your Windows system, and updating the Windows Registry accordingly. Note that the software will be installed so that it will be available to all users of the target computer.

  The security features implemented within the above-mentioned operating systems do not allow ordinary users to undertake such operations. **For this reason, any attempt to run the installation program by a user who is not logged on with full System Administrator privileges will be blocked**. Similarly, if later the program needs to be 'Repaired', 'Modified' or 'Removed', a System Administrator must also undertake this task.

- **Local vs. Remote Installation** - As part of the installation procedure the Windows Registry will be automatically updated as mentioned above. The Setup program will update these files for the computer **on which it is currently being run**. Problems may arise, therefore, if a Network Administrator, sitting at a remote computer, attempts to use the setup procedure as a vehicle for just transferring files to a directory on a workstation. The possibility then exists that the system files on that workstation will not be correctly updated, and the HAZOP Manager program will not run. With this in mind, it might be better to undertake installations whilst sitting in front of the target machine.

INSTALLING THE SOFTWARE

Place the installation CD in your CD-ROM drive… a menu of installation options as illustrated below should be displayed within approximately 15 to 20 seconds. If this auto-run facility fails, or is disabled on your computer, use Windows (File) Explorer to run Launch.exe on the CD.



As shown in the illustration above, there are three options relating to the installation of the software:

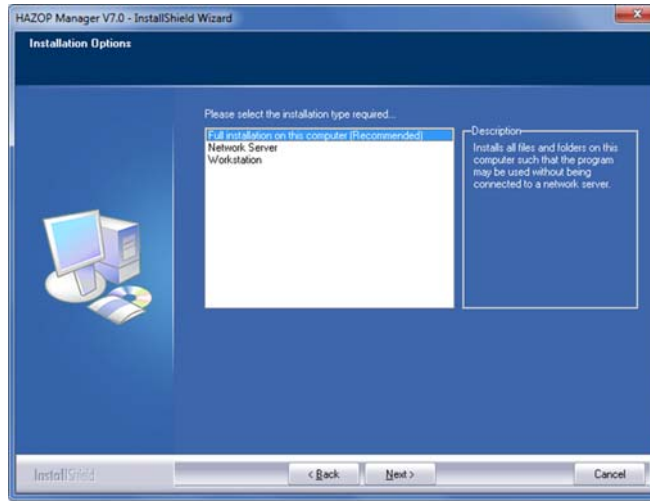
- **HAZOP Manager V7.0** - Pressing this button will launch the setup routine for the program's installation. **This option must, of course, be selected for all installations.**
- **DESkey DK2 Drivers** - The software is protected by a DESkey DK2 USB program key (dongle). Pressing this button will launch the setup routine for installing the necessary drivers and DLLs on the target computer. **This option must be selected for all installations.**
- **DESkey Network Server Drivers** - As mentioned above, the program is protected by a DESkey DK2 device. In most circumstances, this would be plugged directly into the computer currently running the HAZOP Manager program. It is possible, however, to have a DK2 encoded with multiple program licences, such that a single device will permit the simultaneous running of

multiple copies of the software (up to the licence count). In this case, the DK2 will need to be plugged into a network server accessible to all workstations on which *both* the program *and* the basic DESkey DK2 drivers in the options above have been installed. Pressing this button will launch the setup routine for installing the necessary licence management software and drivers on the chosen network server. **This option need only be selected in the circumstances described,** and it would essentially be a separate procedure to that carried out for the first two choices above.

For the sake of clarity, the procedures and decisions involved in each of the above three options will be described separately in the sections that follow.

INSTALLING HAZOP Manager V7.0

After the first familiar 'Welcome' screen, the 'Installation Options' window illustrated below will be displayed. It is important to note that the entries in that window regarding 'Network Server' and 'Workstation' are not related in any way to the explanations given above about the location of the DESkey device and its drivers. Rather, these installation options refer to the location of *program* files, and whether you wish them all to be installed on the target computer as recommended, or alternatively have them split for administrative purposes between a network server and a workstation.



Installation Options

The recommended course of action when installing the software is to create a 'stand-alone' installation, with all files residing in a read/write directory on the target computer. This is the '**Full Installation**' option in the dialog illustrated on the previous page. For each 'Full Installation' you will need to subsequently install the DESkey DK2 Drivers on the computer concerned.

The Setup routine does, however, have the facility to install certain program files (executables and dynamic link libraries) to a network server, such that future updates to such files would only need to be carried out in one location. This is the '**Network Server**' option in the abovementioned dialog. The basic DESkey DK2 Drivers should **not** be installed on this server.

A Network Server installation must be *followed* by one or more '**Workstation**' installations. These will create registry entries and shortcut icons, and copy user files, to each workstation on which the HAZOP Manager program will be used. Following each 'Workstation' installation, you will need to install the DESkey DK2 drivers on that workstation.

If you choose the **Full Installation,** you will subsequently be given the *option* to install certain program files in a read-only folder, and other user files in a folder with full read-write permissions. This is discussed in the section that follows.

Choosing the location of User Files

The program utilises and creates many files that are editable, and which in most circumstances must be accessible to all users of the software. These are, for example, Data files, Keywords, Resources, Headings, Macros, Causes and Failure Rate databases, etc. (hereafter referred to as 'User Files'). It is important that these User Files are stored in a location that has read/write permission for all persons who will be running the program on the target computer. In other words, they should not be located in one individual's personal 'My Documents' folder unless it can be guaranteed that no one else will need access to his or her data files. When performing a 'Workstation' installation, this is the main consideration. However, as mentioned in the previous section, even when performing a 'Full Installation' it is sometimes deemed necessary for the program files (executables and DLLs) to be located in a read only folder on the target computer to prevent inadvertent modification or even

deletion. The Setup program will enquire whether the main program directory will be read-only, and if that is the case, request that another location be specified for User files. It is important that you take heed of this enquiry and request… the most common reason for subsequent problems in running the HAZOP Manager software are User Files incorrectly located in read-only directories.

INSTALLING THE DESkey DK2 DRIVERS

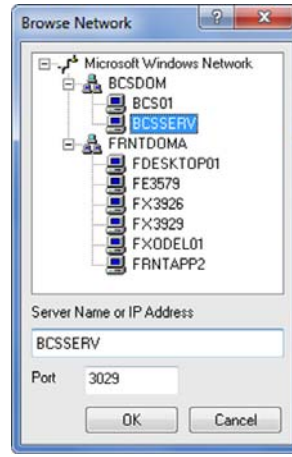
Important – You should not plug your DESkey USB program key into the target computer until these drivers have been loaded (this *may* require a re-boot of the computer). Failure to follow this sequence could result in your Windows operating System associating the device with its own inappropriate drivers, and if that occurs you will be unable to run the HAZOP Manager software. Note that, ***after installing the drivers***, if a 'Found New Hardware Wizard' is displayed on the first occasion that the device is plugged into the computer, you should allow Windows to 'Install the software automatically (Recommended)'. ***It will not be necessary to re-insert the installation CD-ROM.*** Note that to give the end-user complete flexibility to use any USB port on the computer, after installing the drivers, and whilst still logged on as an Administrator, the device should be plugged into each USB port in turn. An ordinary user will not later be able to use a port that has not been initialised in this manner.

To return to the installation procedure, after the first familiar Welcome screen, you will be asked to specify where the DESkey will be located. The options are:

- **This machine**
- **A machine on the network using a DK2 Network Server**

If you select **'This machine'**, then the installation will proceed to completion without any further intervention on your part.

If you select **'A machine on the network etc...'**, then a further 'Network Configuration' dialog will be displayed in which you will be required to name the server to which the DESkey will be fitted, and on which the required server software is, or will be, installed. Press the 'Add' button, which will display a further small dialog, then on this latter dialog press the 'Browse' button to select from a list of servers as illustrated on the following page.



Having selected the network server, the installation will proceed to completion without further intervention on your part. Note that at a later date you may change to another server by invoking the DESkey Applet within Control Panel, and then following essentially the same procedure as described above.

INSTALLING THE DESkey NETWORK SERVER DRIVERS

Firstly, it is recommended that you do not plug the DESkey into the server until prompted to do so after the software has been installed.

Following the first Welcome screen, the next dialog displayed will ask you to specify the directory (folder) on the server in which the driver and licence management software should be located. You may either accept the default presented, or alternatively press the 'Browse' button to select another folder.

After the software has been installed you will be asked whether you wish the service to be started immediately. You should plug the device into the machine and press the 'Yes' button.

Further information regarding the management of a network server installation can be found in the 'DNSrv32V5.pdf' file, which is located in the \DESkey sub-folder on the program's installation CD-ROM. The default password to access the functionality of the 'Network Server Remote Monitor' utility is mentioned on page 5 of that document. This password should be changed as soon as possible, as all users of the HAZOP Manager program will be able to access this utility on their

workstations. This allows them to check who is currently using the software, but it would be undesirable if they could also then use that default password to, for example, abruptly terminate another person's use of the program.

RUNNING THE HAZOP Manager PROGRAM

The software is protected by means of a DESkey DK2 USB security device. You should ensure that the DESkey software has been installed and that the device is fitted to the appropriate port before attempting to run the program (see the DESkey section on page 9 of this guide). Then click on the Start button on your taskbar, highlight the Programs folder, open (highlight) the HAZOP Manager V7.0 sub-folder, and then click on the 'HAZOP Manager V7.0 Program' entry.

On the first occasion the software is run it will register the Hazop Data File extension (*.hdf) with the Windows system. Thereafter, you may also double click on a data file within Windows (File) Explorer to launch the program.

REPAIRING, MODIFYING OR REMOVING THE PROGRAM

During the setup of the HAZOP Manager program, a 'Change/Remove' facility will have been registered within the Add/Remove Programs icon in the Control Panel. Such a facility will provide an easy method of repairing, modifying or removing the program. Note that as an alternative to using Control Panel, you can just run the setup for the program again. Using either method, a dialog will be displayed with the options 'Repair', 'Additional Dictionaries' and 'Remove'.

You may choose to 'Repair' the program if, for instance, certain files or Registry entries required by the software have been inadvertently deleted.

'Additional Dictionaries' would be used to extend the spell checking facility to different languages. The languages available are English, American, German, Dutch and French.

The 'Remove' option should only be selected when the entire application is no longer required on the computer concerned.

The following points should be borne in mind:

- The repair / modification / removal of the program can only be accomplished by a System Administrator.
- Data files created by users will not be deleted, nor will any other user files created by the software during the normal course of its operation. In other words, only the files that were installed during the initial setup will be removed.
- The DESkey drivers will not be automatically uninstalled in case other software on your computer requires a similar device. This will preclude the possibility of such other software suddenly and inexplicably failing to function. However, should you wish to remove these drivers because you are certain that they are no longer required, use the separate entry in Control Panel's Add/Remove Programs list entitled 'DK2 DESkey Drivers'. As mentioned above, a System Administrator will need to accomplish that task.

THE 'DESkey' SOFTWARE PROTECTION DEVICE

Before running the HAZOP Manager program you should ensure that the DESkey software is installed (see the section on DESkey DK2 Driver installation on page 5) and that the device is fitted to the appropriate hardware port.

When starting the program two messages will be very briefly displayed… 'Checking Security' followed by 'Loading Application'. Providing the conditions described in the above paragraph are fulfilled, the program's main window should then be opened. In the very unlikely event that a problem occurs during this phase of program loading, one of the following error messages will be displayed:

- **DESkey not found. Insert DESkey and restart program.** This indicates that the security software cannot locate the DESkey. One potential reason for this message to be displayed is that your DESkey Driver software is not compatible with your Windows operating system. This could be the case if, having successfully run the program in the past, you have now upgraded to a new version of Windows. If this appears to be the cause of the problem, you will need to contact Lihoutech for technical assistance.

  The other reason for this error to occur is either a malfunctioning USB port or a damaged DESkey. Try plugging the program key into another USB port on the computer concerned, and start the program again. If that fails, try running the program, using the same device, on another computer. If the same problem still occurs, contact Lihoutech.

- **DESkey Device Driver not found. Install and restart program.** Note the difference in wording to the message above. This indicates that either the required driver software (see page 5) has not been installed, or the installation of this software has failed. If the latter, you should contact Lihoutech for technical assistance.

- **Decryption failed. Please check your DESkey.** This could indicate either a malfunctioning device, or a problem with the driver installation. Try un-installing and then re-installing the DESkey drivers, and if the problem persists, contact Lihoutech.

- **You do not have authorisation to run this program.** This almost certainly indicates that you are attempting to run the program with a DESkey supplied with a previous version of the HAZOP Manager software. You will need to either update the device with the utility software provided for this purpose, or alternatively contact Lihoutech to order a program upgrade.
- **No Servers could be found.** This message will only be displayed if your DESkey driver installation has been configured to access a multi-user device located remotely on a network server. Almost invariably this will indicate that all program licences are currently in use. However, if this is not the case, either your installation has been set up with incorrect server information, the server software has not been installed, or the device has been removed from the server. Contact your IT Department for assistance.

Note that if the DESkey is removed whilst running the software, the program will display a message stating that licence verification has failed, and requesting that you close the program, refit the device, and then restart the program. **You should always exit the program.** Just reinserting the DESkey will leave the software in a partially unusable state, with some menu options and functionality disabled.

THE ACTION RESPONSE UTILITY PROGRAM

In addition to the HAZOP Manager program files, an executable file named ACTRSP.EXE will have been installed on your computer (or network server). You will also note that an icon will have been created in the HAZOP Manager V7.0 program folder to allow you to run this utility.

Actions generated during a review are almost invariably distributed electronically (for example, as attachments to e-mails). **The generally preferred method is to create Microsoft® Word Action Documents, and that procedure is fully described in Tutorial 9**. There may, however, be occasions when persons to whom actions have been assigned do not have access to Microsoft® Word (for example, they may be using other word processing software). In such circumstances, rather than resorting to the outdated method of distributing hard-copy printed Action Sheets for handwritten completion, the HAZOP Manager program can be used to generate Action Files in a format that can be read and updated by the ACTRSP.EXE utility. This utility, which is freely distributable, would be utilised by recipients to type their responses, and then subsequently to create Response Files. These latter files would be returned to the Study Secretary, who would use them to automatically update the main study file.

If desired, the Study Leader or Secretary may use this utility to open and scan (but not alter) the contents of the returned Response Files before they are read into the main study data file. However, the icon is also provided so that those persons may familiarise themselves with this utility program's operation before despatching it to third parties. They will then be in a better position to advise and guide the recipients of Action Files as to how best to use this facility to generate their responses.

The HAZOP Manager's Help file describes the procedure for distributing actions and updating the data file with returned responses using this methodology (menu option Help - Help Topics, type "ActRsp" in the Index tab, double-click on the 'ACTRSP.EXE utility' entry, and read the two topics listed. In addition, the separate Help file that will be created on the first occasion that ACTRSP.EXE is run on a computer will contain full details of the procedures to use with that utility. However, if questions arise that are not covered either in the HAZOP Manager or ACTRSP programs' Help files, please contact us. We would be happy to discuss any point that requires clarification.

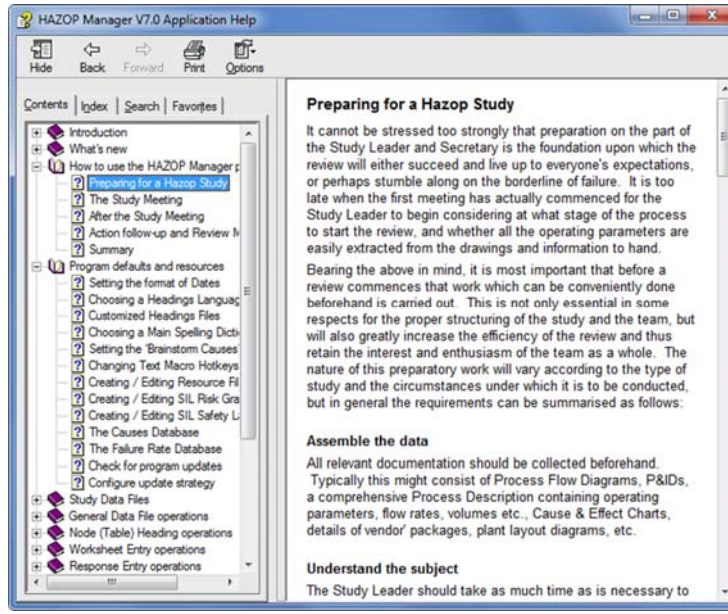
OPERATING GUIDELINES - The Help System

The guidelines and instructions for the HAZOP Manager program are contained in an extremely comprehensive on-line Help system. The following sections will explain how you can most effectively use that Help system, which in many ways will be far superior to having to continually search through many pages of printed documentation.

Before we commence this exploratory exercise, you should start the HAZOP Manager program and wait until the main window is displayed.

Exploring the Help System - The Table of Contents

1. Begin by selecting the 'Help' menu, and the 'Help Topics' option. The window displayed will show the Table of Contents along with the first topic. Each entry in the left-hand pane represents a chapter. Open the third and fourth chapters entitled 'How to use the HAZOP Manager program' and 'Program defaults and resources' by clicking the plus sign next to their book icons.



2. Note that each of these chapters is subdivided into pages. Click on "Preparing for a Hazop Study". The selected topic will appear in the right-hand pane. Take your time to scan the text displayed. There is no need to study these guidelines in detail… at the present time we are getting to know the Help system, rather than learning how to use the program.

3. In the Help window you will notice a section heading "Create a Study Data File". Click on the blue underlined text 'create a new data file', and immediately we go to another page in the manual, which explains how this is accomplished.

4. At the bottom of the text on that page is a heading "Data File Options". Click on the blue underlined text 'Setting Data File Options' to display an explanation of this procedure.

5. Suppose that we wish to continue our exploratory browsing, but this subject of file options interests us, and we might want to return to it later. Save a link to it by clicking on the Favourites tab (in the left had pane), and then press the Add button at the foot of that pane. The page title will be added to the Topics list. Click on the Contents tab to restore the display of the Help System's contents in the left hand pane.

6. Now we want to get back to our original subject of "Preparing for a Hazop Study". We may do this in two ways. Either press the Back button twice, or click on that topic in the left-hand pane.

7. Let us now immediately return to the file options topic. Click on the Favourites tab, ensure 'Setting Data File Options' is highlighted (as the only entry it should already be selected), and click on the Display button. Assuming that we will no longer need to refer to this topic again, press the Remove button, and click again on the Contents tab.

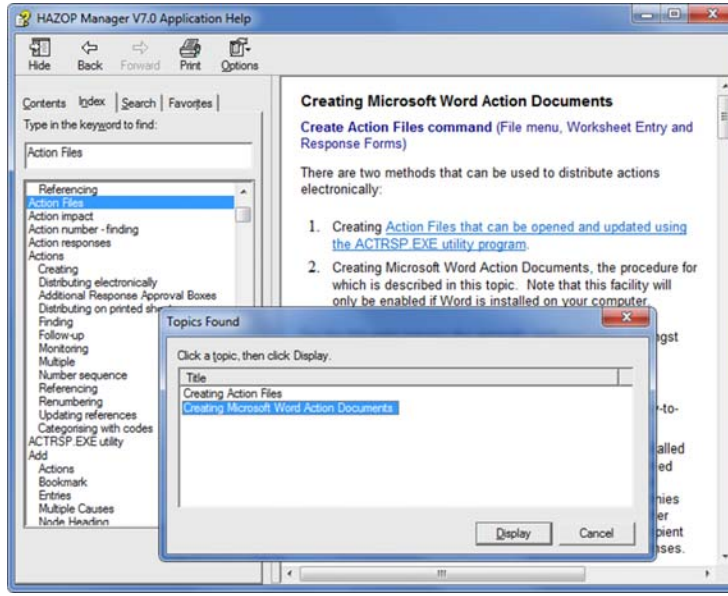
8. In the left hand pane, you will notice that the chapter entitled "Study Data Files" contains three sub-chapters. Open all three so that each individual page is listed.

9. In the third sub-chapter is a page entitled 'The sections of a Data File'. Go to this page and scan through it. It will give you a good appreciation of how a data file is represented on screen, and the toolbar buttons used to move through the file.

10. If you wish you may further explore the Help system, opening additional chapters, using the blue underlined hypertext links, and the Back and Forward buttons.

Exploring the Help System - The Index

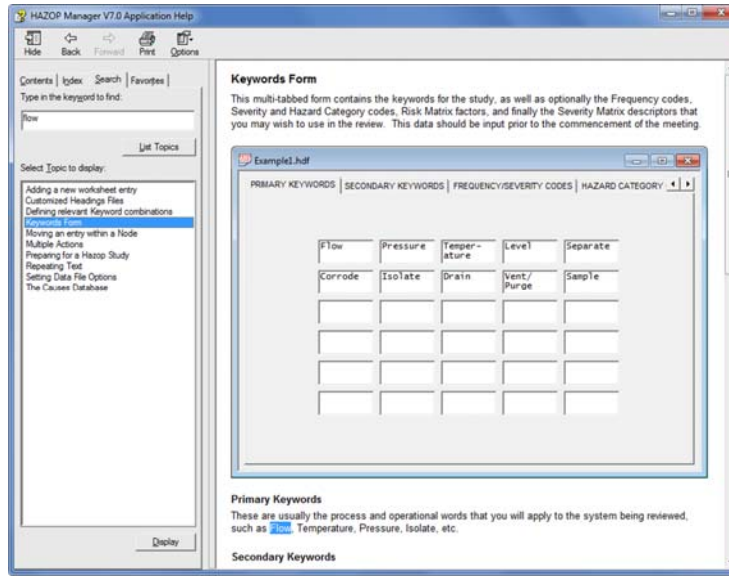
1. If necessary, open the Help system again, then press the Index tab.
2. Earlier in this User Guide, you may remember reading a reference to Action Files. You wish to find out more about these without having to search through every page in the Contents tab.
3. Type 'Action Fi', and the index will scroll automatically to the appropriate section. When you click on the 'Action Files' topic a popup window will indicate that there are two pages concerned with this subject. You may wish to open them both to scan their contents.



4. Type "Word" in the edit box at the top of the Index. Notice that the topic 'Word-Microsoft … Action Documents' is scrolled into view, illustrating that you can find an individual topic using different keywords.

Exploring the Help System - The Search facility

1. If necessary, open the Help system again, then press the Contents tab.
2. Open the chapter “Worksheet Entry operations”, and go to the page ‘Worksheet Entry Form’.
3. The illustration on that page shows a column entitled DEVIATION. In the text below the illustration, the function of that column is explained, with blue hypertext links to the ‘Add Entry’ and ‘Change Keywords’ menu commands. Let us assume, however, that we fail to notice that description. We are particularly interested in obtaining guidance on the subject of keywords without having to scan the entire Contents pane. The easiest option would be type ‘keywords’ on the Index tab, but as an experiment we will use a different method.
4. It is a reasonable assumption than any topic relating to keywords will mention ‘Flow’. To find all topics in which that word occurs, click on the Search tab, input “flow” and then click on the List Topics button.



5. The list of topic pages displayed all contain the word ‘Flow’, and amongst them will be the subject that you are interested in, namely the ‘Keywords Form’.
6. Note that another page listed is ‘Defining relevant Keyword combinations’. Open (double click) that as well to learn more about how this feature may help when applying keywords in a study meeting.
7. Bear in mind that you may use this Search facility with 'wildcard characters', these being '?' and '*'. If, for example, you input the search term “fl??”, topics that included the word 'flow' as well as 'flag' would be listed (both are four characters long). The search term “fl*” would result in topics that included 'flow', 'flag', 'flexible', 'flexibility', etc. being included (the * indicates any number of characters).

Exploring the Help System - Summary

So far we have been using the Help system much as one would refer to a printed manual, and the increase in flexibility and speed we hope is obvious.

If time permits, you should at least open each chapter in the Contents tab, making a mental note of the page headings. It would be very tedious to fully read each individual page, but by scanning only the topic headings you will obtain a basic appreciation of the facilities that are available within the program. Later, when you wish to undertake some seldom used procedure such as copying an entire entry, you will know that there is a quick way to achieve this because you will remember seeing some time ago a topic heading dealing with that subject. You can then use the features of the Help system to obtain a full explanation of how this operation can be accomplished.

In addition to the methods explored above, there is also of course context sensitive help. Highlight a menu option, and whilst keeping it highlighted, press Function Key 1 (don’t release the mouse button until you move the cursor away from the menu entry, or the command itself will be activated). This will display a full explanation of that command. Doing the same with a toolbar button (don’t release the mouse button) will achieve a similar result.

When an entry form or dialog box is displayed, pressing F1 will also display help for that section of the program.

TUTORIALS - Introduction

Working on the principle that the first steps into unknown territory are always the most worrisome, the following Tutorials for the HAZOP Manager software are intended to familiarise you with its basic concepts and structure, and at the same time introduce you to some of the features of the program. They will not cover every detail and facility available. Rather, they are intended to make you confident in your ability to use the program, so that you may continue the exploration on your own.

It is assumed that you have a basic appreciation of how a Hazop Review is conducted, and the general format and requirements for recording the results of such a study. If this is not the case, then you should consult beforehand one of the many books and articles on the subject. That is not to say that you will be completely bewildered without such prior understanding… indeed, the following exercises may serve to shed some light on the subject. However, in such circumstances there may well be times during these tutorials that the meaning of a term or the purpose of an instruction may not be completely understandable. If this happens, visit the Help system by pressing F1. If the text displayed does not explain what you need to know, try the Index or Search facilities. Bear in mind, however, that the Help system is primarily aimed at guiding you in the use of the program, not teaching you the general methodology of Hazop Studies.

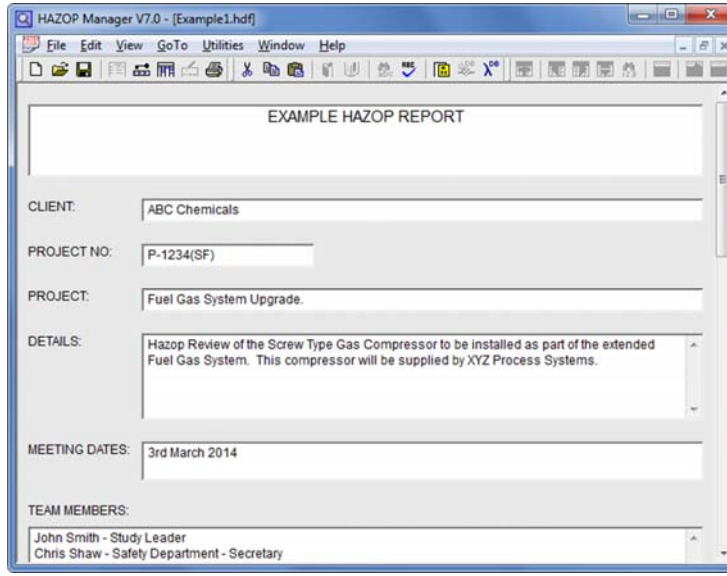
During the course of these tutorials we will employ sample data files named EXAMPLE1 and WORDACTS. These will have been installed with the program in a \DATA sub-directory on your hard disk. You will later make additions and modifications to these files. Should you wish to start again with the files in their original state, copies of them will be found in a sub-directory also entitled \DATA on the HAZOP Manager Installation CD-ROM. Use Windows Explorer to overwrite the hard disk files with those from the CD. **Always do this when you have finished using the tutorials**, so that any colleague wishing to make use of them in the future will not be confused by the changes you have made.

Should you not have access to the CD-ROM mentioned above, you should instead use Windows Explorer to create a "Copy of EXAMPLE1.HDF" (select the file, right click, select 'Copy', right click and select 'Paste'). At the end of the tutorials you can then delete the original file, and rename the copy 'EXAMPLE1.HDF". Do the same for the WORDACTS file mentioned above.

TUTORIAL 1: The Sections of a Data File

This tutorial presents the five main sections of a data file; Study Details, Keywords and Codes, Entries, Node Headings and finally Action Responses. You will learn how to easily navigate between them. No additions or modifications will be made at this stage.

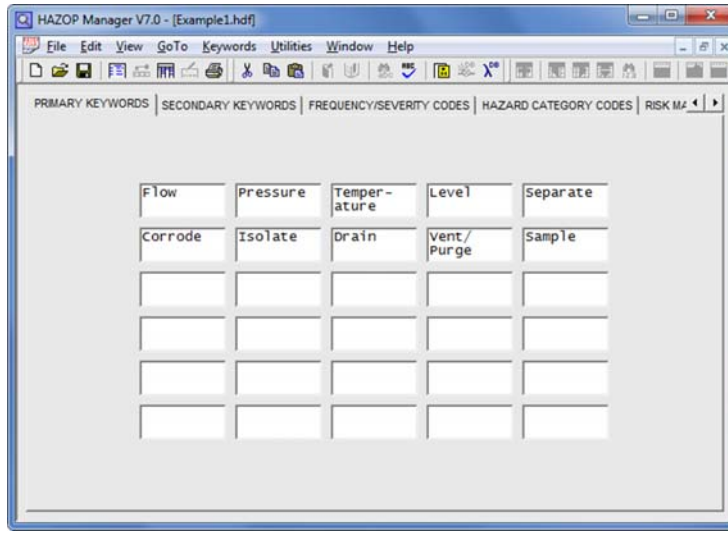
1. Start the HAZOP Manager program, and wait for the title window to be closed.
2. Position the mouse cursor over the  toolbar button. **Do not click the mouse button**. Note the Tooltip that appears explaining that this is the Open (File) button. If you are unfamiliar with tooltips, try pausing with the mouse cursor on other toolbar buttons.
3. Click on the above File Open toolbar button. A standard 'File Open' dialog will be displayed. Locate and open the EXAMPLE1.HDF entry.
4. The Study Details Form will be displayed. Scroll the form using the mouse and the scroll bar. You will see that the information entered on this form is mostly self-explanatory.



5. Try scrolling the form without the mouse, using instead the Ctrl key with the Up/Down arrow keys.

6. Position the form so that the foot of it is displayed, and Press F1. Read the text displayed, paying particular attention to the section at the end of the Help topic that deals with Action Numbers. When finished, close the Help system window.

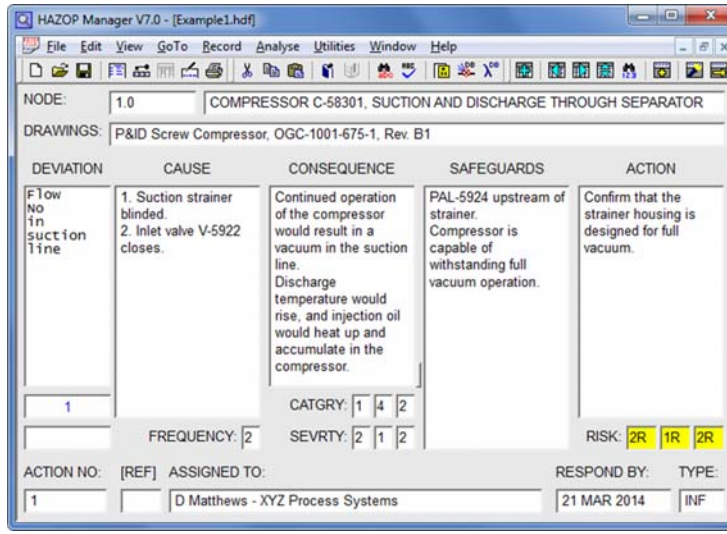
7. Click on the  toolbar button. The Keywords Form will be displayed.



8. View the information entered within each of the six tabs at the top of this form. Press F1, and read about this section of a data file. Note that dependent upon which tab is currently active, the Help window will display different topics when activated. When finished, close the Help system window.

9. Try moving between these two forms (Study Details and Keywords) using the keyboard instead of the mouse. Enter Alt+G ('Go To' menu), followed by D (for 'Details'). Follow this with an Alt+G and then K, and we are back on the Keywords Form.

10. Click on the toolbar button (or Alt+G followed by E). The Entry Form will be displayed, showing the first entry in the file.



11. Press F1 and scan the Worksheet Entry Form help topic. When finished, close the Help system window.

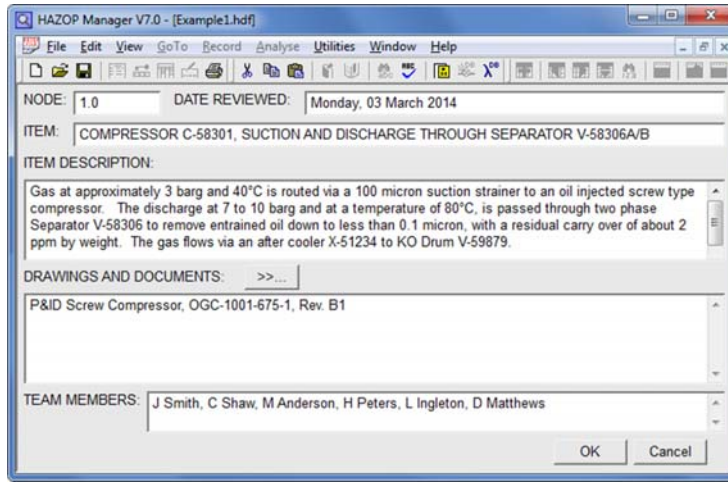
12. So far the forms we have viewed have been maximised. Click on the appropriate button in the caption bar to make the form the normal size for a child window within a frame window. The main program window should remain maximised.

13. Note that the controls within the entire form have been re-sized, so that there is no need to use scroll bars to view hidden sections. Try re-sizing the form by dragging the sides of its window. Note also, that there is a minimum in both the horizontal and vertical planes below which the program prevents re-sizing.

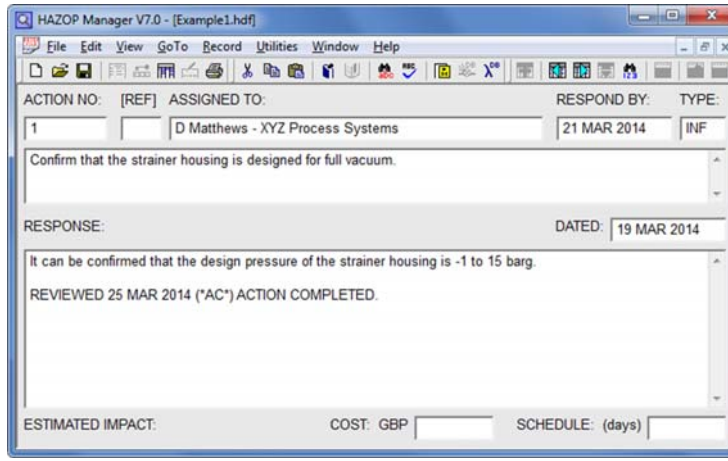
14. Maximise the Entry form again using the appropriate button on the caption bar.

15. With small screens (especially on notebook computers) the text may appear too small to be easily readable. From the View menu, select 'Font Size and Weight', and experiment with different settings until you find a combination that you are happy with.

16. The top two lines on this form show abridged information from the Node Heading. To view the Node Heading in full, either use the  button or double click anywhere on the Node Heading information at the top of the form. Press F1, and scan the topic displayed. When finished, close the Help system window and press Cancel on the Node Heading Form.



17. Click on the  toolbar button. The Action Response Form will be displayed containing D Matthews' response to Action 1.



18. As you will see, this response has been reviewed and found to be acceptable. Press F1 and scan the Response Entry Form help topic. When finished, close the Help system.
19. At the present time we can view only the Action and Response details. Press the  button to display the entire entry. Then press the  button to display the Node Heading for that entry.
20. Press the Cancel button, followed by the  toolbar button. We are now back on the response we were viewing. From this quick series of mouse clicks you will see how easy it is to view every detail relating to an action without the need to start up extra program modules. (With regard to displaying the Node Heading, even though this doesn't apply to the current response, in some cases you may wish to verify that an operating parameter referred to is indeed accurate).
21. Now navigate back to the Study Details section of the data file using the  and  toolbar buttons.
22. Unless you wish to practice further, you may now close the EXAMPLE1 file (Alt+F then C). Should you have had enough for one session, you may also close down the program (Alt+F then X). Of course, for either or both of these operations you may click on the appropriate buttons on the caption bars.

The above exercise will have introduced you to the methods involved in moving between various sections of a data file. At this stage you should have learnt that there are five main sectors; Study Details, Keywords and Codes, Entries, Node Headings and finally Action Responses. Having read the Help along the way, you will have a grasp of the purpose of each section in terms of the data it contains, and how certain sections relate to one another. You should now feel confident that you could find your way to any section of the file.

If you wish to practice what we have been doing so far, by all means do so. However, do not make any changes to the file at this stage… we will commence that in Tutorial 5.

In the next Tutorial, we will show ways in which you may navigate through the information contained within various sections of the file.

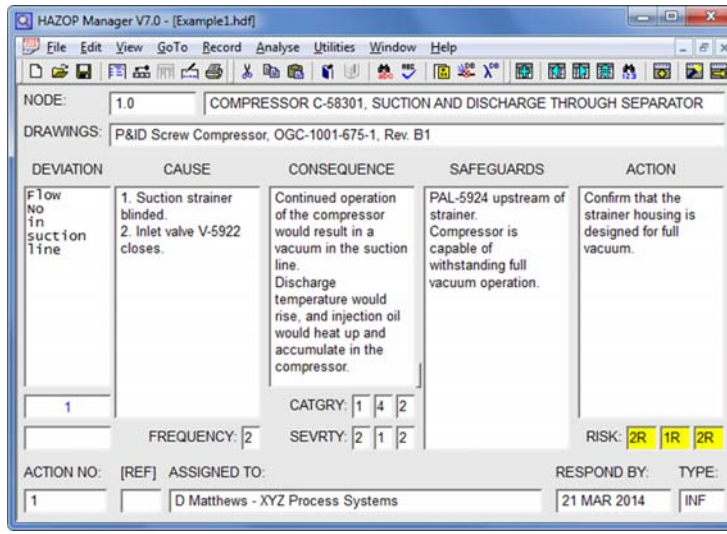
TUTORIAL 2: Navigating through the Data File

This tutorial will show you some of the many ways that you can navigate through and find information held in various sections of the data file. If you are not familiar with the sections of a data file, you can refer to the previous tutorial.

1. Start the HAZOP Manager program, and wait for the title window to be closed.

2. Click on the File Open toolbar button . A standard 'File Open' dialog will be displayed. Locate and open EXAMPLE1.HDF.

3. Click on the toolbar button (or Alt+G followed by E). The Entry Form will be displayed, showing the first entry in the file.

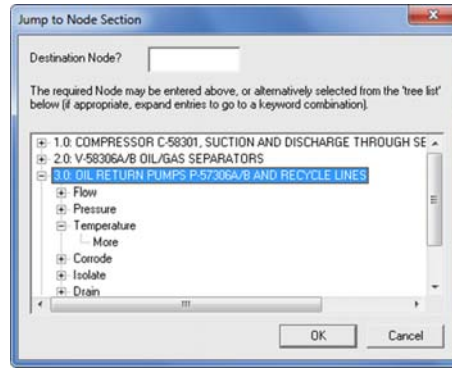


4. Use the and buttons to page forwards and backwards through the entries in the data file. Then try using the Ctrl+PgDn and Ctrl+PgUp keys to achieve the same result. As you page through the file, note that from time to time the Node Heading information at the top will change. In other words, each Node contains many entries.

5. Page backwards until you are on the first entry again.

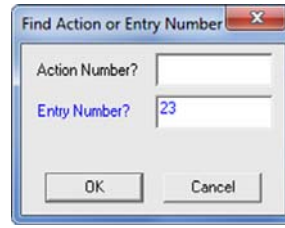
   EXAMPLE1 is a relatively small data file. Getting to a specified position within this file by paging through entry-by-entry is tedious enough… imagine what it would be like with a much larger file. With this in mind, we will explore quicker means of traversing through entries.

6. Click on the  button. Double-click on Node 3.0 in the displayed list (or enter 3.0 in 'Destination Node?' box and press OK). You will see that we have immediately jumped to the first entry in Node 3.0. As described in the guidance text, we can also jump to a particular keyword or keyword combination section within a Node.



7. Click on the  button. Use the 'Previous' and 'Next' buttons on the Heading Form displayed to move from heading to heading. Display the heading for Node 1.0, and press OK. We are back on the first entry again.

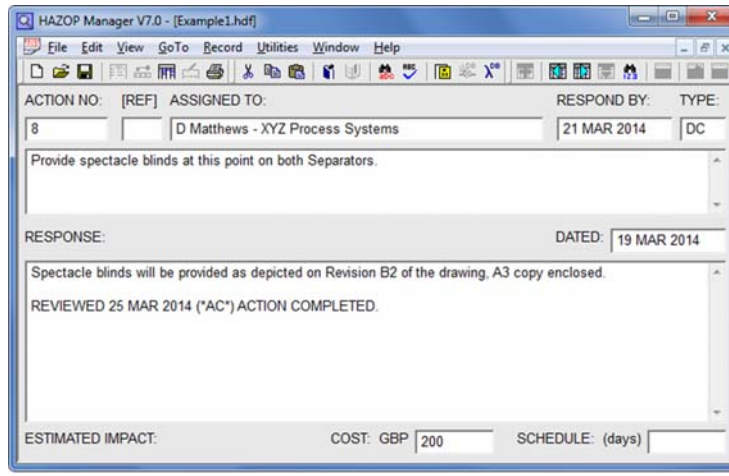
8. Click on the  button (or Alt+R then F), enter 23 in the 'Entry Number?' field of the displayed dialog and press OK. We are now viewing Entry 23.



9. Click on the  button again, and enter 16, but this time in the 'Action Number?' field of the displayed dialog. Press OK, and we are now viewing the entry containing Action 16.

10. Use the 'Record' menu, 'Find Action or Entry' option, to go to Action 8.

11. View the Response for this Action by clicking the  toolbar button. The Response for Action 8 will be displayed.



12. In the Response Form you may use many of the same techniques for navigation that you have already used when viewing the Entries Form. The only difference is that you will be navigating through Actions and their Responses rather than individual Entries. Try it… use the  and  buttons to page backwards and forwards through the Action Responses.

13. Now, select 'Find Action' from the 'Record' menu (Alt+R then F) or press the  toolbar button. In the dialog displayed type 23, and press OK.

14. As you will have discovered, there is no such Action number. Press Cancel, or change the 23 to 16 and press OK.

15. Make a mental note of the way in which the date is displayed in the small box entitled 'DATED:'. We will experiment with date formats in a later exercise.

16. Unless you wish to practice further, you may now close the EXAMPLE1 file (Alt+F then C). Should you have had enough for one session, you may also close down the program (Alt+F then X). Of course, for either or both of these operations you may click on the appropriate buttons on the caption bars.

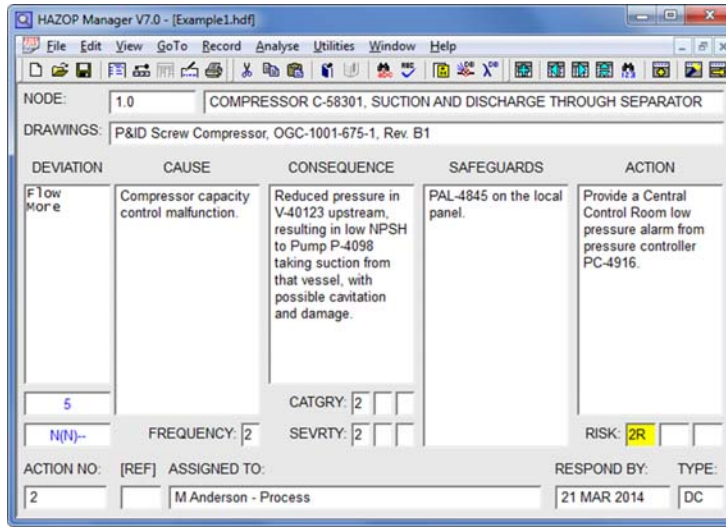
This exercise will have introduced you to the methods involved in navigating through information held within certain sections of a data file. At this stage you should feel reasonably confident about opening and viewing such a file, knowing with a fair degree of certainty what to expect when you press one of the toolbar buttons or invoke one of the menu options that we have used.

If you wish to practice what we have been doing so far, by all means do so. However, do not make any changes to the file at this stage… we will commence that in Tutorial 5.

TUTORIAL 3: Configuring the Entry and Response Forms

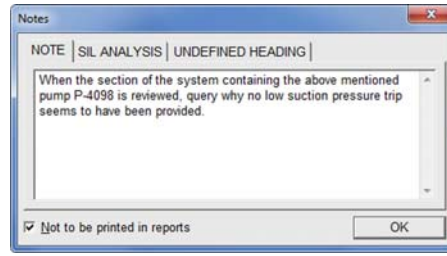
On the Entry and Response Forms that we have seen in the previous two tutorials there are fields or input boxes that do not always need to be displayed. Conversely, there are also fields (extra columns and input boxes) that can be added to the default layout that we have been viewing previously. This tutorial will show you how to display and hide data that might, or might not, be necessary for a particular study.

1. Start the HAZOP Manager program, open the EXAMPLE1.HDF file and go to the Entries section. Navigate to Entry 5. You should now be viewing the entry shown below.



2. Notice that, beneath the blue (Entry Number) 5 on the left of the form, there is a field displaying the text "N(N)--". This indicates that a NOTE has been attached to this entry. To view the note, double click the blue text, or select 'Notes' from the 'Record' menu.

   In the dialog displayed (illustrated on the following page), you will see three tabs. The first tab stores a general note for the current entry. The second and third tabs may be used to store other data for this entry if required. In this case, the second tab has been labelled 'SIL Analysis'. In Tutorial 12 we will show how it is possible to define your own headings for this and many other forms.

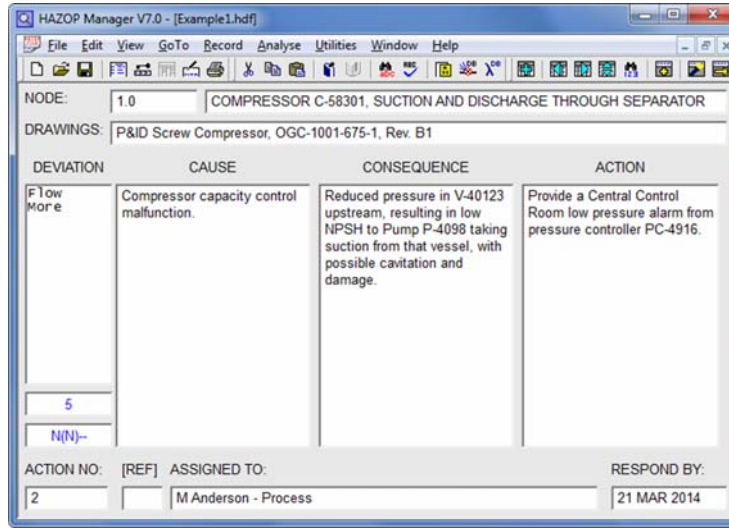


3. Whilst the 'Notes' dialog is displayed, press F1 for an explanation of this facility. Close the Help window, and press the OK button to close the Notes dialog.

4. Using the 'View' menu, toggle off the display of the Frequency, Severity, and Category input boxes. Use the Help system to view explanations of these entry points (Hint: you could try hovering the mouse over each menu command and pressing F1).

5. Using the 'View' menu again, hide the SAFEGUARDS column by selecting 'Extra Columns', then '0 - None'.

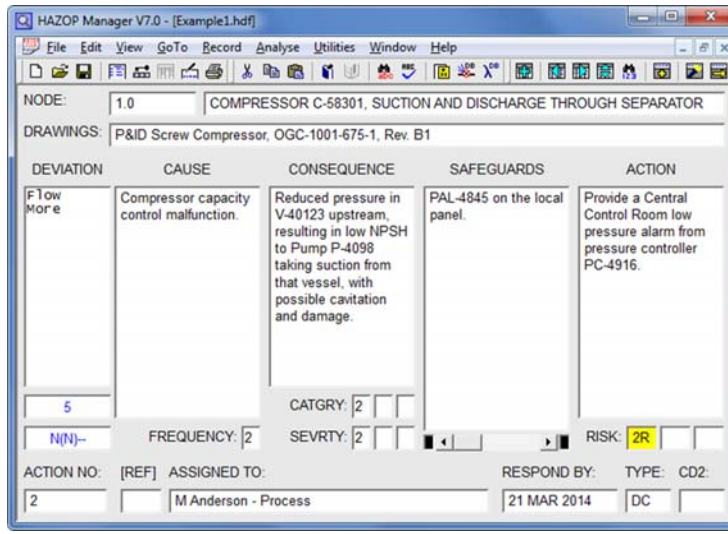
6. Finally, use the 'View' menu to hide the TYPE input box by selecting 'Action Codes', then '0 - None'. The Entry Form should now be configured as illustrated below.



7. Now that you have learnt how to remove entry points that may not be required for a particular review, restore the default layout as illustrated at the start of this tutorial. You may do this by using the mouse and menu commands, or by using only the keyboard as described below:

    a. Press Alt+V (the Alt key and the letter V together) followed by F to show the Frequency box.
    b. Press Alt+V followed by C to show the Category boxes.
    c. Press Alt+V followed by V to show the Severity (and Risk) boxes.
    d. Press Alt+V followed by X, then press 1 to show the SAFEGUARDS column.
    e. Finally, press Alt+V followed by A, then press 1 to show the TYPE input box.

8. During the above steps involving the use of the View menu, you may well have noticed that further commands were available in the 'Extra Columns' and 'Action Codes' items. These allow you to configure the default Entry Form layout with additional columns and an additional Action Code input box. Use the 'View' menu as before to show those additional entry points, using your mouse, or alternatively the keys Alt+V, then X followed by 3, and Alt+V, then A followed by 2. The layout of the Entry Form should now be as illustrated below:



9. During the above operation a message box will have been displayed that drew your attention to the scroll bar at the bottom of the SAFEGUARDS column. For a more detailed explanation, press Alt+V then X, followed by F1 (Function Key 1, used to invoke context-sensitive Help). Read the Help topic in the right-hand pane. When finished, close the Help window.

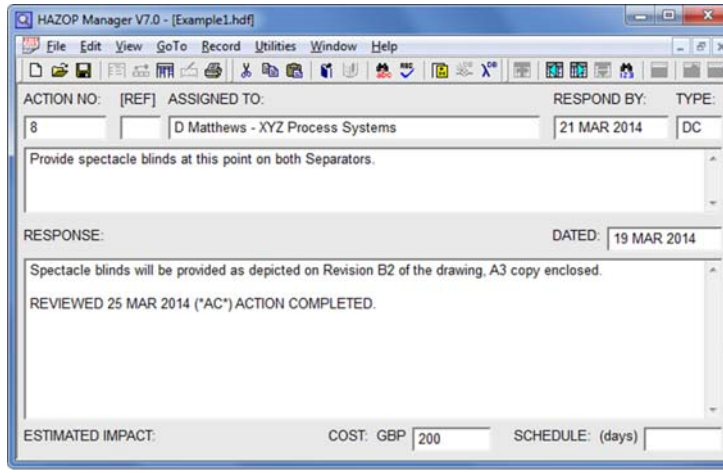
10. You may use the above-mentioned scroll bar to view the additional columns. However, to practice the method that would normally be used for data input during a study meeting, place the caret (the blinking text entry cursor) in the SAFEGUARDS column. Now slowly press the Tab key three (3) times, and then Shift+Tab three (3) times. You will see that in both the forward and backwards directions, the 'hidden' columns are displayed to allow the input of data without having to use the mouse.

    You will have noted that the third column is entitled UNDEFINED HEADING, and the additional Action Code entry box is entitled CD2. If you need to use these input points, you would wish to give them a meaningful name, and the general procedures for achieving that is described in Tutorial 12.

11. **Important:** In the remaining tutorials we will be using the EXAMPLE1 file in its default layout, and therefore we need to revert to that layout with the two steps listed below. This is necessary because, for each individual data file, the program saves the current configuration when that file is closed, and we would not want any unnecessary additional input points to confuse the sequence of steps in those future tutorials. You should therefore:

    a. Press Alt+V followed by X, then press 1 to show only the SAFEGUARDS column.
    b. Press Alt+V followed by A, then press 1 to hide the CD2 input box, with only the TYPE input box being visible.

12. As with the Entry Form, the Response Form can also be customised, but to a much lesser extent. Navigate to Action 8, and click the  toolbar button to show the Response section as illustrated on the following page



13. You will see that at the foot of the form the estimated cost of the action has been entered. Press F1 to display the Response Form help topic. At the end of the last paragraph there is a hypertext link entitled View Impact. Click on this, read the topic displayed, then close the Help window.

14. You will have read that the default is not to display these Cost and Schedule entry points, unless you have specifically asked for this information to be supplied. For the EXAMPLE1 file, this default has been overridden.

15. Try toggling off the display of these entry points (Alt+V then I), then showing them again.

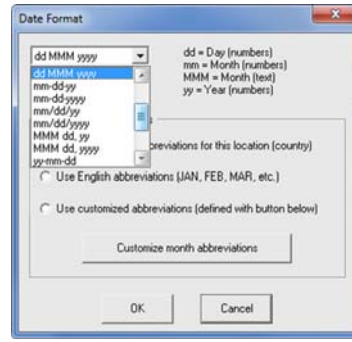
16. Unless you wish to practice further, you may now close the EXAMPLE1 file (Alt+F then C). Should you have had enough for one session, you may also close down the program (Alt+F then X). Of course, for either or both of these operations you may click on the appropriate buttons on the caption bars.

The above exercise will have covered the procedures involved in reducing or increasing the number of columns or input boxes that can be used to record information for entries in a data file. In the next two tutorials, we will learn how to set program and file defaults, and then start to input entries. If you wish to practice what we have been doing so far, by all means do so. However, do not make any changes to the file at this stage… we will commence that in Tutorial 5.

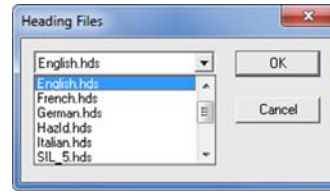
TUTORIAL 4: Setting Program Defaults

In this exercise we will experiment with setting some program defaults.

1. If necessary, start the HAZOP Manager program, and wait for the title window to close.
2. From the 'Set Defaults' menu, choose the 'Date Format' option.

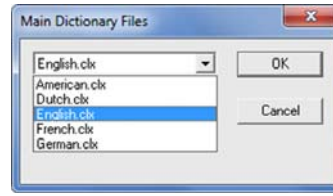


3. The list box displayed shows the date formats available, with the currently selected one being highlighted. For a detailed explanation of the other options available (such as 'Use the standard abbreviations for this locations (country)', 'Use English abbreviations', etc) press the F1 key to display the relevant Help topic. After reading the details, close the Help window.
4. Solely for the purpose of experimentation, make a note of the default format, then change it and press OK.
5. From the 'Set Defaults' menu, choose the 'Headings File' option. The list box displayed includes various language files… English, French, German, Dutch, Italian, Spanish as well as other specialised headings for various types of safety review. Press F1 to invoke the Help system and scan the topic displayed. Close the Help window.



6. According to the country in which you are located, change if necessary the default language, and press OK.

7. From the 'Set Defaults' menu, choose the 'Main Spelling Dictionary' option. The list box displayed will show the language dictionaries that were installed with the software (to add new dictionaries, please refer to page 7). Press F1 to invoke the Help system and scan the topic displayed. Close the Help window.

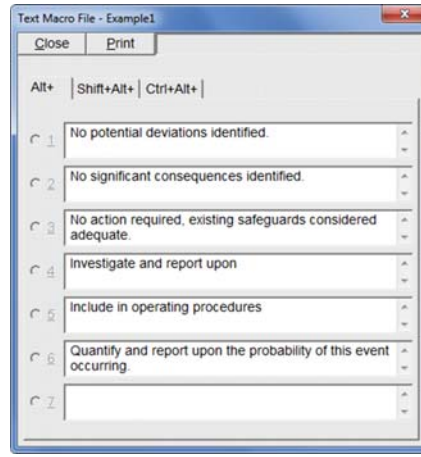


8. According to the language in which studies are to be recorded, change if necessary the default dictionary file, and press OK.

9. From the 'Set Defaults' menu, choose the 'Brainstorm Causes' option. Press F1 to invoke the Help system and scan the topic displayed and also the link that describes the method of Brainstorming Causes. Close the Help system and Cancel the Brainstorm Causes dialog.

10. A text macro file contains text that can be automatically input by the program, usually because the typing of such text is repeatedly required during a review. From the 'Utilities' menu select the 'Edit Macro File' command. Open the EXAMPLE1.MAC file.

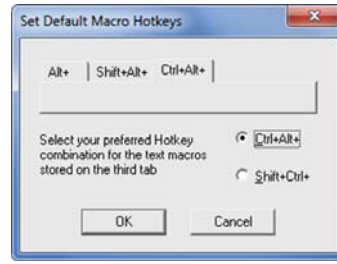
11. The Text Macro dialog displayed will contain three tabs as illustrated on the following page. You will see that the heading on each tab shows the key combination required to invoke the macros in that section. Click on each tab to view the phrases it contains.



12. Whilst the Macro dialog is displayed, press F1. Scan the topic, paying particular attention to the discussion regarding the various ways in which the phrases may be automatically entered into your data file.

13. When finished, close the Help system window, and then press the 'Close' button on the dialog. Note that by 'editing' this macro file we have effectively loaded it into memory ready for use. To make these phrases available without editing, we would use instead the 'Utilities' menu 'Load Macros' command.

14. As mentioned earlier, each tab on the Text Macro File shows the key combination used to auto-type those macros. With the keyboards used in some countries, the default keys on the third tab conflict with other input functionality provided by the Windows operating system. To resolve that conflict, select the 'Set Defaults' menu, and choose the 'Text Macro Hotkeys' option. The following dialog will be displayed.



15. Press F1 to invoke the Help system, which will explain the circumstances in which a change of key combination would be required. Close the Help window. If the circumstances described apply to you, select the 'Shift+Ctrl+' option. Do not, however, make this change unless it is necessary. Press OK to close the dialog.
16. Now open the EXAMPLE1 data file. However, on this occasion don't use the File Open command as we have previously done. Instead, press the Alt+F keys and then stop. Note the listing of the file in the popup menu with a 1 against it. Press 1 and our file is opened without the need to select it from a standard File Open dialog. This file list will always contain the last six files that you have worked with, and it is the easiest way to open a data file.
17. Go to the Entries form by using the  toolbar button.
18. From the 'File' menu select the 'Change Headings' option. The list box displayed is the same as the one we saw in Step 5 above. Select the GERMAN.HDS file, press OK, and view the result.
19. Open the combo box again (Alt+F then H). Select ENGLISH.HDS from the list to reinstate the previous headings, and then press OK.
20. Note that the date in the 'RESPOND BY' field (bottom right hand corner of the Entries window) is now displayed in the format you chose in Step 4 of this exercise.
21. Now close the EXAMPLE1 file and reset the Date Format (Alt+S then D) to its original value (that original format would have been either 'dd MMM yyyy', 'MMM dd, yyyy' or 'yyyy, MMM dd', according to the country in which you are located).
22. Unless you wish to continue experimenting with Defaults, you may close down the program.

The above exercise will have shown you how to set some basic program defaults, and you will have seen the effect of changing Headings and Date Formats. In the next tutorial we will start entering new data into the file.

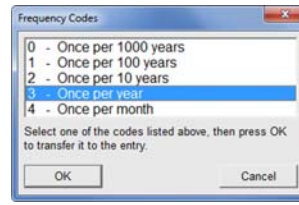
TUTORIAL 5: Adding Entries / Multiple Actions / Renumbering

In this exercise, we will be creating new entries in our data file

1. If necessary, start the HAZOP Manager program.
2. Open the EXAMPLE1 data file. Go to the Entries form by using the  toolbar button, then jump to Node 3.0 using the  toolbar button.
3. From the 'Edit' menu, choose 'Load Macros' and open EXAMPLE1.MAC. In order to use text macros, you don't have to view the Macros window, but should you wish to, you can do so by pressing the  button.
4. We will now add an entry to Node 3.0. Press the  toolbar button. **This is the one with the turquoise (blue) plus sign**. Note the difference and the placement of this button compared to that containing the yellow plus sign. The button with the turquoise sign is grouped with those for Previous and Next entry, whereas the one with the yellow plus sign (for adding a new Node Heading) is grouped with those relating to moving from Node to Node.
5. The Primary Keywords dialog will be displayed. Before we actually select a keyword, experiment with the various means by which this can be achieved. Type the letter 'p', followed by 'l' (L) and then 'd' (if two keywords begin with the same letter, typing that letter twice will highlight the second one). Then try typing '01', followed by '05' (Num Lock must be enabled). At any stage during these key operations we could have pressed <Enter> to transfer the word into the DEVIATION column.
6. The final method of selecting a keyword is by the use of the mouse. Double click on the word 'Isolate'.
7. The Secondary Keywords will be displayed. You will note that most keywords are displayed in a red font. Press F1, select the hypertext link for Add Entry, and in the lower half of that topic page you will see another hypertext link entitled Defining relevant Keyword combinations. Click on that link to read an explanation of why, and how, such combinations may be defined. When finished, close the Help window and select the 'No' keyword.

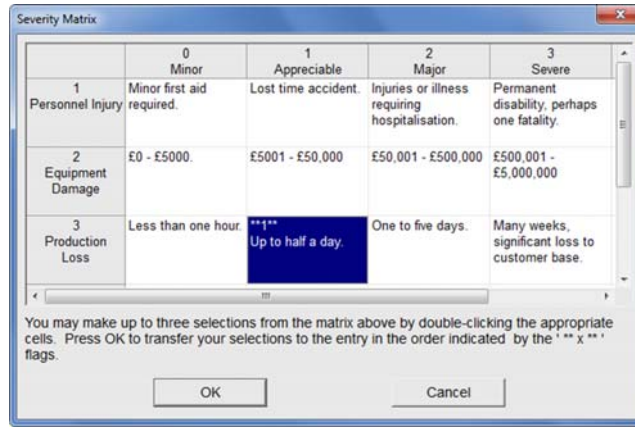
8. Type in the CAUSE column “Spectacle blinds fitted upstream of pump suction isolation valves”.

9. In the FREQUENCY box, enter ‘3’ or right-click and choose ‘3 – Once per year’ from the list that is displayed (note the tooltips that appear if you pause the mouse over either this input box or its descriptor).



10. Type in the CONSEQUENCE column “Unable to swing blinds for maintenance of standby pump without shutting down system”.

11. In the first CATGRY box input a ‘3’, and in the first SEVRTY box input a ‘1’. This indicates that the consequences entail an Appreciable Production Loss. Alternatively, right-click in either box to show the Severity Matrix (press F1 at this point for guidance on how to use the Severity Matrix), double-click the cell that indicates Appreciable Production Loss (‘Up to half a day’) and press OK.

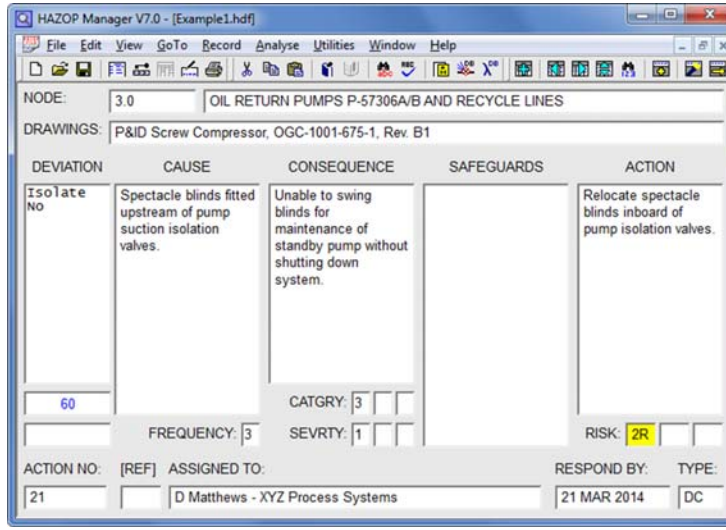


12. Tab across to the ACTION column, and type “Relocate spectacle blinds inboard of pump isolation valves”.

13. Tab to the ASSIGNED TO column. Then press Shift+Alt+4 (all three keys together).

14. The name “D Matthews - XYZ Process Systems” will have been automatically typed into our ASSIGNED TO box. Tab forward to the RESPOND BY entry point, and type, in the indicated format, the date 21 MAR 2014.

15. Finally, in the (action) TYPE box, input "DC" to indicate a Design Change.



16. We have now completed our first entry. Make a mental note of the Entry Number (it should be 60)… we will need that number in Step 19 below. Page forward once to the next entry in the data file. This will state that no potential isolation problems were identified, which is now incorrect. We need to change the ‘Isolate All’ keywords to ‘Isolate Remainder’.

17. There are two methods for altering keywords on an entry that has already been recorded. Firstly you may use Alt+R then K. Try this, and then immediately press the Cancel button. Secondly, you may double click in the DEVIATION column. Do so, and the same dialog that was displayed a moment ago appears again.

18. We want to retain the word Isolate, so press OK. Then select ‘Remainder’ and press OK again.

19. Now purely to illustrate two facilities that may well be of use in your studies, type a new sentence in the CAUSE column "See Entry 60." Highlight the number 60, then select from the 'Edit' menu the option 'Mark reference…' '…to Entry number'. After pressing OK on the explanatory dialog displayed, the end result should be "See Entry 60™°".

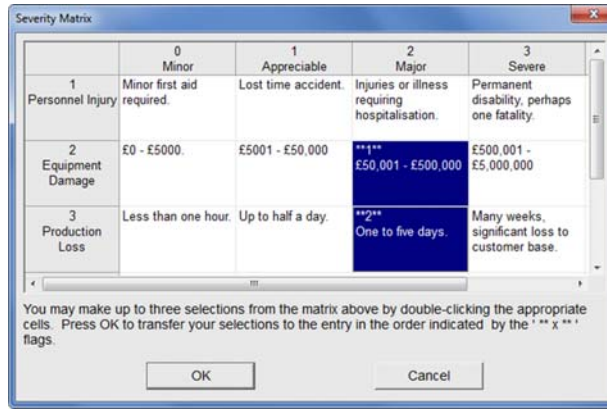
20. We will need to return to this entry later in the tutorial. Set a bookmark for it by pressing the  toolbar button (or enter Alt+E then B). Accept the default description of "NODE 3.0, Isolate Remainder", and press OK.

21. The next entry we make will be a multiple action entry. Before we do, press F1 to display the Help window, and use the Index to locate the Multiple Actions topic. Read the two pages listed to gain an understanding about when and how you would create such entries, then close the Help window.

22. Press the  button (or Alt+R then A), and select 'Flow' followed by 'Less'.

23. Type in the CAUSE column "Discharge filter partially blinded" and allocate the Frequency code 2 (likely to occur approximately every ten years). Under CONSEQUENCE type "Inadequate lubrication results in compressor damage".

24. Because this consequence will result in both Major Equipment Damage as well as Major Production Loss, we want to create two pairs of CATGRY/SEVRTY codes. Right-click in any of the CATGRY or SEVRTY boxes to show the Severity Matrix.

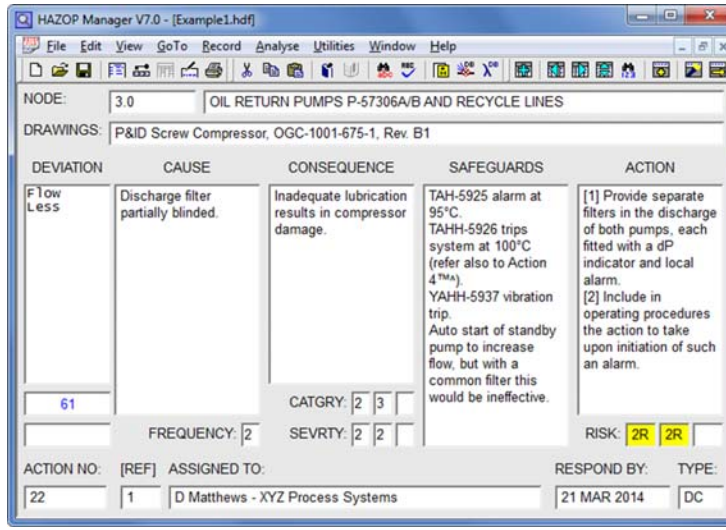


25. Double-click the cell corresponding to Major Equipment Damage such that '**1**' appears in the cell. Next, double-click the cell corresponding to Major Production Loss such that '**2**' appears in the cell. Now, click OK.

26. Page back one entry. Note that from Isolate we are now automatically in the Flow Less section of Node 3.0. Copy on to the clipboard all the text in the SAFEGUARDS column, which should commence "TAH-5925 alarm …". Page forward again to our incomplete entry, and paste that text into the SAFEGUARDS column. To the last item add the text "… flow, but with a common filter this would be ineffective".

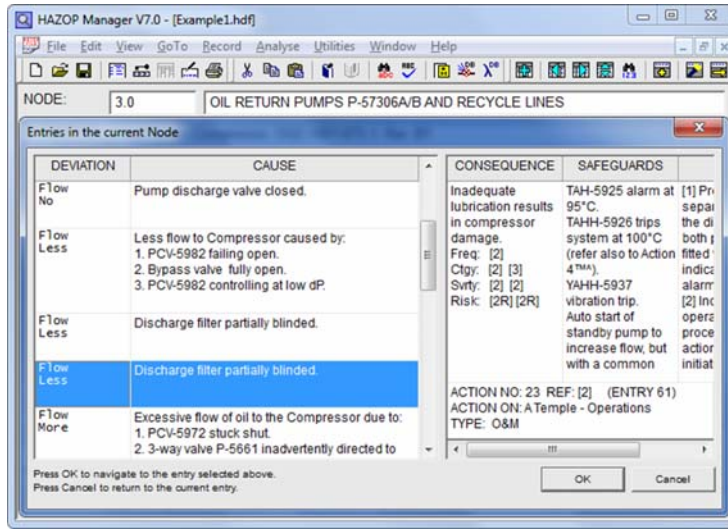
27. In the ACTION column type "[1] Provide separate filters in the discharge of both pumps, each fitted with a dP indicator and local alarm". Then on the next line type "[2]" followed by a space. From our Text Macro file invoke the macro "Include in operating procedures", and finish off by adding "the action to take upon initiation of such an alarm" (the macro can be invoked by pressing Alt+5).

28. Tab forward, and notice that we now stop on the [REF] entry position. Type '1', and allocate this action to D Matthews (using our macros, Shift+Alt+4), with a RESPOND BY date of 21 MAR 2014, and a TYPE of "DC". The completed entry should appear as follows:



29. Now from the 'Record' menu select the 'Extra Action' command (Alt+R then X). Type '2' in the [REF] box, and allocate this second action to "A Temple - Operations" (macro Shift+Alt+3), with a RESPOND BY date of 11 APR 2014 and a TYPE of "O&M" (indicating an update of the Operations & Maintenance manual).

30. Press the  toolbar button, and the dialog illustrated below will be displayed. This facility allows you review (but not edit) multiple entries within a Node by scrolling them vertically. Press F1 to display the relevant Help topic, which lists some of the situations in which you will find this feature useful. Close the Help window.



31. Using the scroll bar in the left-hand pane, display the first entry in the Node, and then highlight it by clicking on it with the mouse. Note the Action Number in the right-hand pane… it should be 14.

32. Using the 'down' arrow key (on your keyboard), highlight each of the remaining entries in turn, noting the Action numbers as they are displayed. The sequence should be 14, 15, 22, 23, 16, 17, and finally 21. Close the dialog by pressing the Cancel button.

33. From the 'Help' menu select the 'Help Topics' command, and using the Index, locate the 'Renumber - Actions' topic. Read the text displayed, then close the Help system.

34. We will now re-order the Action Number sequence. From the 'Utilities' menu select 'Renumber…' then select the '…Actions' command. Respond Yes to the message regarding a back-up file. In the dialog displayed, accept the default value of '1' and press 'Renumber'. Page through the entries in Node 3.0 again, and you will see that the Action Numbers are now in sequence.

35. Repeat Steps 30 to 32, but on this occasion pay attention to the Entry Numbers. They are also out of sequence. To correct this, from the 'Utilities' menu select 'Renumber…' then select the '…Entries' command. Respond Yes to the message regarding a back-up file. In the dialog displayed, accept the default value of '1' and press 'Renumber'. Page through the entries in Node 3.0 again, and you will see that the Entry Numbers are also now in sequence.

36. You should now be on Entry number 47, the last entry in Node 3.0 (if not, use the  button to jump to that entry).

37. You will remember that we referenced Entry 60 in Step 19, and set a bookmark in our file in Step 20. Return to that bookmark using the  toolbar button. Highlight "Node 3.0, Isolate Remainder" and press OK. You will see that the reference has been automatically updated to the number '44', and you can verify the accuracy of this by paging back once to the previously referenced entry that we created in Steps 4 to 15.

This tutorial has described basic data entry. This the part of the program with which you should become most familiar, as it is these operations that will need to be carried out during a Study meeting.

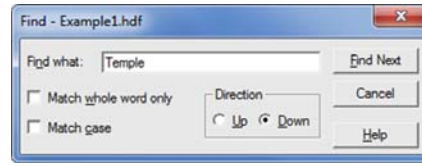
If time permits, you should now make some further entries of your own. However, before you do, first go to Node 4.0 to record those entries in that Node. **This is important,** because the next tutorial will assume that Nodes 1.0 to 3.0 contain the entries as they are at present.

In addition, you may well have noticed when opening the EXAMPLE1 data file, another file entitled 'DON'T INPUT ENTRIES LIKE THIS' was in the same folder. You should open this latter file and view its contents. It contains examples of both the incorrect, and then the correct, method of recording multiple Causes for the same keyword combination (e.g. Flow No). As this file is provided purely for the purpose of illustrating certain important concepts, you should not alter its contents.

TUTORIAL 6: Find/Replace and Data File Analysis

This tutorial consists of two simple exercises in finding and replacing text, followed by selecting records from the EXAMPLE1 data file and exporting an analysis tabulation.

1. If necessary, start the HAZOP Manager program and open the EXAMPLE1 data file. Go to the Entries form by using the toolbar button. Ensure that you are on that first entry in the file (if the file has just been opened, you will be positioned on that first entry).
2. We will now undertake a very simple exercise in finding and replacing text within our data file. Assume that at the end of the study meeting our attention is belatedly drawn to the fact that the name 'A Temple', which we have been inputting into the 'ASSIGNED TO' box, should in fact be 'A Templar'. Rather than paging through the entire file to find and correct each error, we will use the 'Find text' facility to speed up this operation.
3. Click on the toolbar button (or input Alt+E then F). The 'Find - Example1.hdf' dialog will be displayed. In the 'Find what' edit box, input "Temple" (without the quotes).

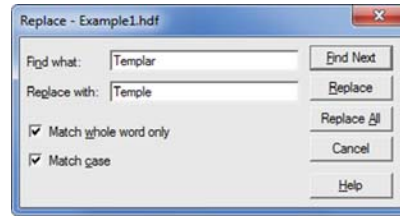


4. Click on the 'Find Next' button, and the first occurrence of the name will be highlighted.
5. Manually edit 'Temple' to 'Templar'. Then highlight the edited name and press Ctrl+C to copy it to the clipboard (ensure that only the name is highlighted, not including the space before and/or after). Instead of Ctrl+C we could instead use the toolbar button.
6. Now press the 'Find Next' button again, and automatically insert the correct name by immediately pressing Ctrl+V or using the toolbar button. Repeat this operation until you get the message

"Searched to last entry". Then press the Cancel button on the Find dialog.

7. In the above short exercise we have corrected a series of errors in our data file using the most accurate method. Before each correction, we have had the opportunity to visually check that the text found is what was actually intended. For example, suppose we wished to change the Action Assignee's name 'Mate', which should have been spelt 'Mait'. When the word ***mate***rials is found, we could skip that rather than changing it to ***mait***rials.

8. Even though it is recommended that the most accurate method of replacing text is as described above, the program does have the facility to replace text automatically. Select menu option Edit, then Replace (or input Alt+E, then E). The dialog illustrated below will be displayed. Click on the 'Help' button (or press F1) and read the topic, paying particular attention to the sections entitled 'The Replace All option' as well as 'Match whole words only'.

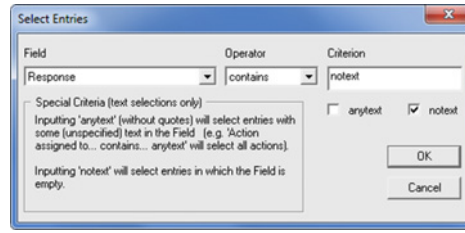


9. We will use this Replace facility to undo the changes we have just made. In the 'Find what' input box, change "Temple" (the last word we asked to program to find) to "Templar". In the 'Replace with' box type "Temple". The result should be as illustrated above.

10. Press the 'Replace All' button. The program will notify us that 8 occurrences have been found and replaced. Press the Cancel button to close the dialog.

11. We now turn to a potentially much more useful and powerful facility, that of analysing the data within the file. Input Alt+A, then S. The 'Select Entries' dialog is displayed.

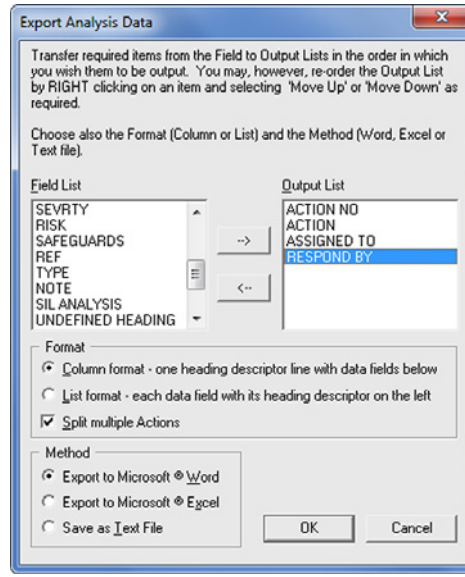
12. Drop down the 'Field' list box and select the 'Response' entry towards the end of the list. Similarly select the 'contains' entry from the 'Operator' list box. Finally select the 'notext' option. The result should appear as illustrated on the following page.



13. From the description of 'Special Criteria' given on the dialog, you will see that we are selecting all entries for which a Response has not been received. Press the OK button on the 'Select Entries' dialog. The program will advise you that 6 entries have been selected. You will note that the entry screen also turns to green. This indicates we are now dealing with a sub-set of our data file (i.e. only the six entries selected).

14. If you page through to the last three of those six entries, you will see that they are the ones we created in Tutorial 5.

15. We now wish to produce a report listing those six entries. From the 'Analyse' menu, choose the 'Export analysis data' option. In the dialog displayed, transfer ACTION NO, ACTION, ASSIGNED TO, RESPOND BY from the Field List to the Output List (either double-click on the items in that order or use the arrow button provided).



16. Whilst the 'Export Analysis Data' dialog is displayed, press F1 and read the Help topic that will explain the various options available. Close the Help window.

17. **If Microsoft® Word is installed on your computer** (as you will see, this is the default in the Method section of the dialog), press OK. Word will be automatically started, and after accepting the warning message about not touching the keyboard or clicking the mouse, a table will be created containing the data that you specified in step 15 from those six entries.

18. In a real action follow-up situation you could use a report such as this to contact those persons involved to remind them that they need to return their responses. After viewing the document, close Word (there is no need to save the file).

19. **If Microsoft® Excel is installed on your computer**, repeat step 15. On this occasion, however, select 'Export to Microsoft Excel' in the Method section and press OK. An Excel worksheet will be automatically created containing the selected data. After viewing the document, close Excel (there is no need to save the file).

20. Finally, restore access to your full data file by selecting the 'Analyse' menu, and then the 'Undo all selections' option. You can now page through the entire file rather than just the six selected entries, and the screen reverts to its normal background colour.

21. In the steps above you have employed the analysis facility within the program in a somewhat contrived situation. This facility is potentially so useful that it might be as well to spend a short time becoming more familiar with its features.

22. Display the Help Topics (Alt+H then H), and using the Search tab, locate all topics containing the word 'Analysing'. Go to the topic entitled 'Analysing your Data file' paying particular attention to the section at the foot of the page entitled 'Potential uses'. You should also visit the 'Exporting Analysis Data' topic.

23. The last topic that you should study is 'Monitoring the progress of Actions'. In the exercise above we selected entries on the simple criteria that their Response section was empty. If we distribute actions electronically, we would need to employ different criteria. This topic explains the procedure to adopt in detail, particularly in relation to the *TTAF* flag that is used by the program, and also how to select only those actions for which responses are *overdue*.

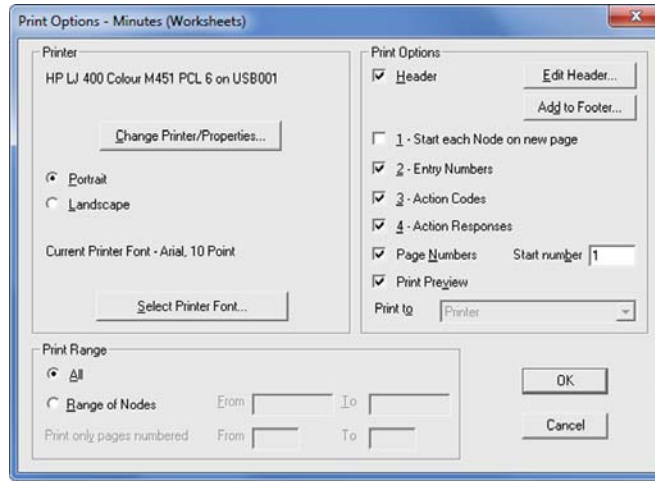
The above short analysis exercise has served as an introduction to this feature of the program. As mentioned, it has been somewhat contrived, as the EXAMPLE1 file is relatively small. In addition, this file contains data applicable to a late stage in a Hazop Study, when many responses have been received and a series of review meetings carried out.

Notwithstanding the above limitations, you should now feel reasonably confident in your ability to extract information and operate upon a sub-set of your data file. You may, of course, conduct further exercises of your own to experiment with different Fields, Operators, and Criteria. However, the point to bear in mind is that this facility, which is so simple to use, can significantly ease the burden of controlling action follow-up and management reporting.

TUTORIAL 7: Printing Reports

In this exercise you will print the type of reports that need to be produced at the end of a study meeting. If possible, you should ensure that a printer is attached to your computer.

1. If necessary, start the HAZOP Manager program, and wait for the title window to close. Open the EXAMPLE1 data file.
2. From the 'File' menu, select 'Print Minutes (Worksheets)'.
3. The 'Print Options - Minutes (Worksheets)' dialog will be displayed. Press F1 to display the help topic that will explain the function of the various options contained within this dialog. When you have finished reading the topic, close the Help window.



4. Select the printer font if necessary. Select the 'Header' option. If a message is displayed stating "Incomplete Header details …", press the 'Edit Header' button. Input your Company's name in the displayed dialog. Press F1, and the Help topic will explain that this company name will be printed in future on all types of report, and for all data files, for which you specify a header . Close the Help window, and press OK to close the 'Page Header' dialog.
5. Press the 'Add to Footer' button. On the dialog displayed, input the text "Issued 10 May 2014". Press F1, and the Help topic will explain that this footer text, if saved, will apply only to this data file,

and only to the current type of report being generated (in this case, the Minutes - Worksheets). Close the Help window, press OK on the 'Page Footer' dialog, and then press the 'Yes' button when asked whether the footer text should be saved.

6. Select the 'Page Numbers' as well as the '4 - Action Responses' options. Other selections in the Printer and Print Options groups can be left in their default state.
7. We will initially preview our entire report. Check the 'Print Preview' option, and then press OK.
8. In the preview window use the 'Zoom In', 'Next Page' and 'Prev Page' buttons to scan your report. When finished, press the 'Close' button to return to our data file.
9. **If Microsoft Word is installed on your computer,** you may export the report you have just previewed to a Word document. Otherwise, continue at Step 15.
10. From the 'File' menu, choose 'Print Minutes (Worksheets)' again.
11. In the print options dialog, select the 'Page Numbers' option. Leave the other Print Options group selections in their default state (for the sake of variety, we will not output the Action Responses in this report).
12. Drop down the 'Print to' list box, and select the 'Word document' entry. Press the OK button.
13. Microsoft Word will be started, and you will be able to watch as the data in your file is transferred to a new document. When the operation has been completed, you may page through this document in the normal manner. In an actual study situation, such a file could be made read-only (i.e. password protected) and then either posted onto your network or e-mailed to interested parties.
14. Close Microsoft Word. You may save the Word document if you wish to scan it again when you have finished this tutorial.
15. **If a printer is attached to your computer**, you may now actually print some partial reports. Otherwise, you will need to utilise the Print Preview option instead. From the 'File' menu, select 'Print

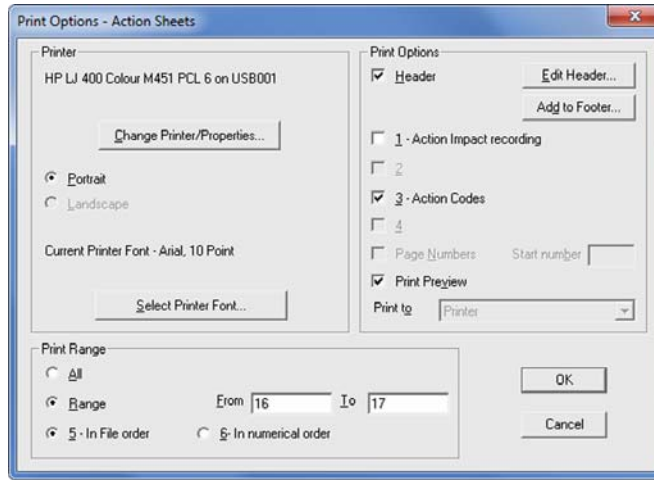
Minutes (Worksheets)' again. In the print options dialog, select the 'Page Numbers' option. However, on this occasion instead of accepting the default of 1, enter 12 in the 'Start number' box.

16. You will be printing only Node 3.0, in which you made some entries in Tutorial 5. Click on the 'Range' radio button, and type "3.0" (without the quotes) in both the 'From' and 'To' boxes. Press OK.

17. Retrieve the report from the printer and scan the pages produced. Note the new entries mentioned above, which should have Action Numbers 16, 17, and 20. Note also how multiple actions 16 and 17 have been printed.

18. To output the Action Sheets for those new entries, from the 'File' menu, choose the 'Print Action Sheets' command.

19. Select the printer font if necessary (chose a reasonable sized font, such as Arial 10 Point). Select 'Print Preview'. In the Print Range area of the dialog, click on the 'Range' radio button and type 16 in the 'From' box and 17 in the 'To' box as shown below. Press OK.



20. In the preview window use the 'Zoom In', 'Next Page' and 'Prev Page' buttons to scan the two Action Sheets. When finished, press the 'Close' button to return to our data file.

21. Select the 'Print Action Sheets' menu option again. Select 'Print Preview'. Click the 'Range' radio button, and type 20 in both the 'From' and 'To' boxes. Press OK. After viewing the result, close the preview window.

22. Using the same procedure as in Step 21 above, print preview the sheet for Action 18.

23. Action 18 has had a response returned, and this has been recorded in the file. This response has been reviewed, and further action was requested. Note the difference in format between the other sheets and that just printed for 18… especially the RESPOND BY box at the top of the page, and the provision of a new box for a FURTHER RESPONSE.

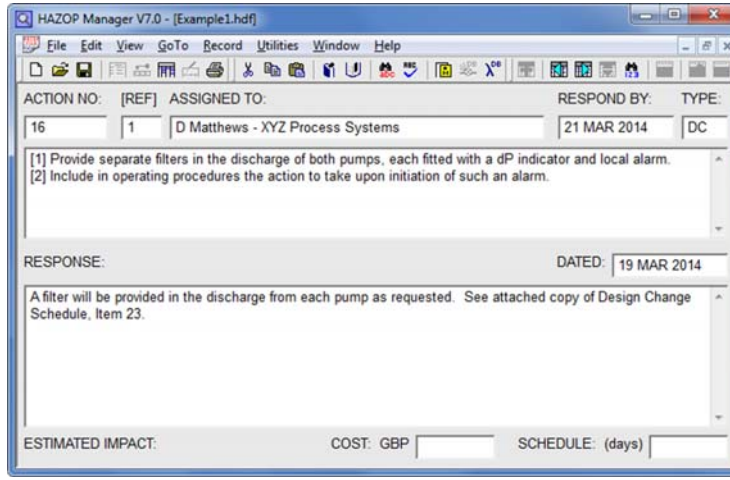
In this short exercise you have experimented with print previewing, exporting a report to Word, printing one Node and a few Action Sheets. For the most part you have left print options set at their defaults. It would be as well, therefore, to explore other options not previously utilised, such as Landscape printing for Worksheets, printing to PDF and HTML Documents using the 'Print to' list box, and so on.

Note that outputting to PDF or HTML formats requires that a separate file be created before you can view the results, so to save clutter in your \Data sub-folder you should perhaps give those files the name 'Test', overwriting existing files of that name as necessary.

TUTORIAL 8: Action Response Input and Review

This short exercise will deal with the *manual* input of Action Responses, and in part mimic the procedures that will be undertaken for response review meetings. Note that it is most likely that you will be distributing actions electronically as described in Tutorial 9, and therefore the manual input of responses would not be necessary. Completing this tutorial first, however, will lay the groundwork and give you a basic understanding of the procedures involved in Action tracking and close-out.

1. If necessary, start the HAZOP Manager program, and wait for the title window to close. Open the EXAMPLE1 data file, and go to the Entries form by using the  toolbar button.
2. You will be inputting responses for Actions 16, 17 and 20 that you created in Tutorial 5, and for which you print-previewed Action Sheets in Tutorial 7. Locate, therefore, the entry for Action 16 using the 'Find Action or Entry' command on the 'Record' menu (Alt+R then F), and then press the  toolbar button to display the Response form.
3. Type the date 19 MAR 2014, followed by the response "A filter will be provided in the discharge from each pump as requested. See attached copy of Design Change Schedule, Item 23".



4. Page forward to the next action (number 17), type the date 24 MAR 2014, and then the response "Alarm response included in Section 5.3 of Operating Manual, copy of paragraph enclosed".

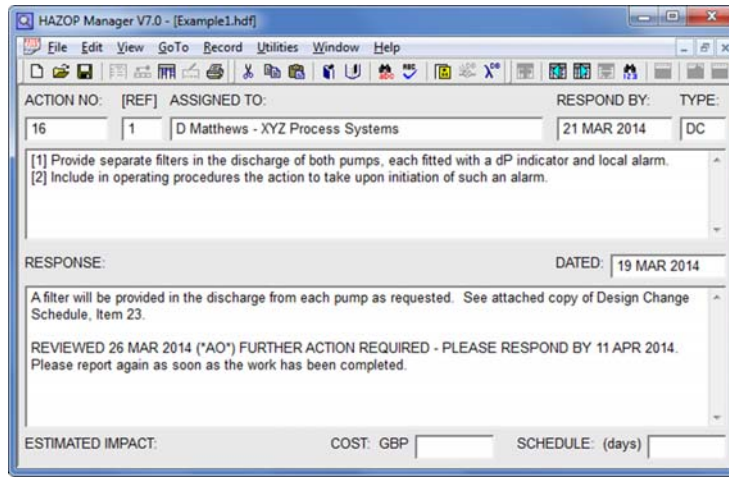
5. Now either page forward to Action 20, or alternatively locate it using the  toolbar button. Type the date 19 MAR 2014, followed by the response "Drawing amended, A3 copy attached".

6. We now have some responses to review. To prepare ourselves for this rather contrived review of only three responses, we need to load the appropriate text macro file. From the 'Edit' menu select the 'Load Macros' command, and open (load) the REVIEW.MAC file.

7. Immediately display the macro file, either with the key combination Alt+M, or alternatively by pressing the  toolbar button.

8. The first two macros will probably commence (unless previously altered) with the phrase "REVIEWED 25 MAR 2014 etc". Alter the day of the month in both of these macros to "26", then press the 'Close' button (**not** the  button on the caption bar… if that button is used, the changes made above **will not be saved**).

9. Display the response to Action 16. Position the caret (cursor) on the line below the response, which we entered in Step 3 above, and auto-type the second macro (press Alt+2). On the following line use the text macro keys Alt+5 to auto-type "Please report again as soon as the work has been completed".

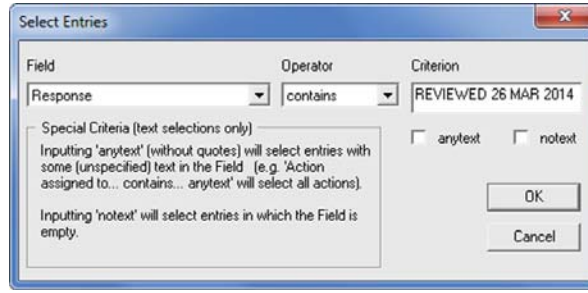


10. Page forward to Action 17, and on the line below the response, invoke the first macro (press Alt+1).

11. Locate Action 20, and do the same as in the previous step.

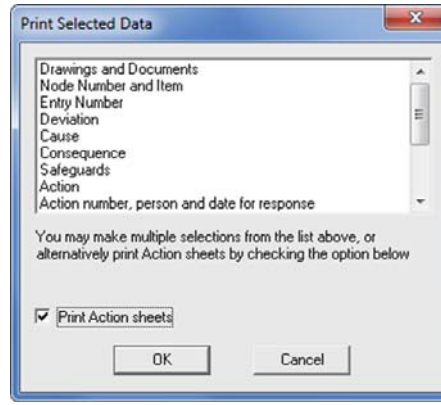
12. Our review has resulted in two responses being accepted (Actions 17 and 20), with a further response being necessary for Action 16. We need, therefore, to print a new Action Sheet for 16. We could, of course, do that in the same manner as was employed in Tutorial 7. However, if there were many such sheets to print, printing them one at a time would be a very cumbersome process. We will therefore adopt a more efficient approach.

13. Return to the Entry form using the  toolbar button. From the '<u>A</u>nalyse' menu choose the '<u>S</u>elect' command. With the Field set to 'Response' and the Operator set to 'contains', position the caret in the Criterion box and press Alt+1. Now carefully use the Backspace key to delete all the text that follows the year 2014. The result should appear as illustrated below. Press the OK button.



14. Three entries should have been selected. Select again (ALT+A, then S) with the Field set to 'Response', the Operator set to 'excludes', and this time type the text "(*AC*)" (without the quotes). Here, we are asking for all actions that have not been completed; those that have been completed would contain the (*AC*) flag. Press OK.

15. Action 16 only should have been selected. Choose the '<u>P</u>rint Selection' command from the '<u>A</u>nalyse' menu, and check the 'Print Action sheets' option as shown on the following page. Press OK.



16. The 'Print Options - Action Sheets' dialog will be displayed. Select the 'Print Preview' option, and then press OK.
17. We can now see the format of the Action Sheet that would be printed and forwarded to D Matthews, showing the results of our review and requesting a further response in the box provided. Close the Print Preview window.
18. Finally, reinstate our full file with the 'Undo all selections' command from the Analyse menu.

This short tutorial is only an introduction to the subject of action follow-up. Further explanation and guidance is given in the Help system. You should refer initially to the 'Action follow-up and Review Meetings' in the chapter entitled 'How to use the HAZOP Manager program'. More importantly, in the 'Action follow-up' chapter the topics 'Monitoring the progress of Actions' as well as 'Review Meetings and Further Actions' should be studied to gain a more comprehensive understanding of the methods that you can adopt.

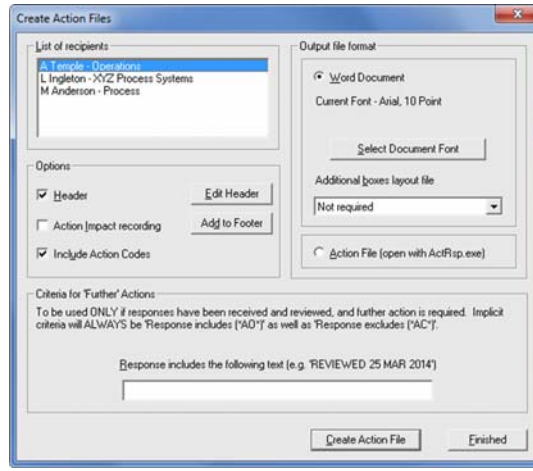
TUTORIAL 9: Distributing Actions Electronically

Having learnt how to print and distribute Action Sheets in Tutorial 7, and how to manually input and review responses in Tutorial 8, we will now explore the methods you can use to distribute actions electronically in the form of Microsoft® Word documents.

1. If necessary, start the HAZOP Manager program, and wait for the title window to close. Instead of using the EXAMPLE1 data file, for this exercise you should open the **WORDACTS.HDF** data file. Then use the  toolbar button to go to the Entries section.

2. Press the  toolbar button to display the Response section of the first entry, which has an action assigned to D Matthews. You will see that it contains the text "(*TTAF*) Transferred to Microsoft Word (04 MAR 2014)". This indicates that this action has already been transferred to an Action Document.

3. Page forward to the next action, which was assigned to M Anderson. There is no text in this response, so this action has not yet been output to an Action Document. If you continue to page forward, you will note that all of D Matthews' actions have been dealt with, but files still need to be created for the other three persons to whom actions were assigned.

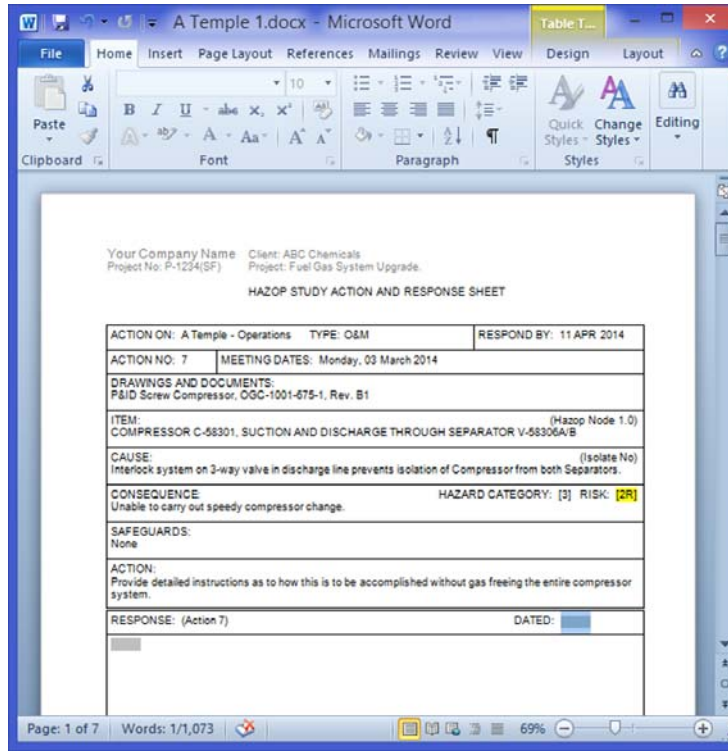


4. From the ‘File’ menu, select the ‘Create Action Files’ command. Press ‘Yes’ on the message suggesting that you take a back-up before proceeding. The ‘Create Action Files’ dialog will be displayed as illustrated on the previous page.

5. Select (tick) the ‘Header’ option. If a message ‘Incomplete Header details...’ is displayed, press the ‘Edit Header’ button, input your Company’s name, and press OK.

6. In the ‘List of recipients’, highlight ‘A Temple - Operations’. Then press the ‘Create Action File’ button.

7. Microsoft® Word will be started. Press OK on the message warning you not to touch the keyboard or click the mouse. You will then see A Temple’s actions being automatically transferred to a Word document as illustrated below.



8. At the end of the process two messages will be displayed. Press OK on the first message explaining that the document has been protected with a password. Press OK again on the second message advising that the procedure has been completed.

9. Scroll through the document, and you will see that the layout mimics the format of printed Action Sheets as created in Tutorial 7, with each page containing a single action. Note also that you will be prevented from editing the source data... all that you can input is the date, your response and your name (the latter may be required if actions have been assigned to a department rather than an individual).

10. Save the Word document, giving it the name 'A Temple 1' (the '1' will allow us to allocate unique names for any further Action Documents created for A Temple *from this study*). Close the document. By default it will have been saved in the same folder as the study data file.

11. Switch back to the HAZOP Manager program. The 'Create Action Files' dialog should still be displayed. Note that 'A Temple - Operations' is no longer in the 'List of recipients', because an Action Document has just been created for that person.

12. Press F1, and the Help topic 'Creating Action Files' will be displayed. Immediately click on the hyperlink 'Creating Microsoft Word Action Documents' to display that topic. Study the contents, and then click on the hyperlink 'Additional Response Approval Boxes' about halfway down the page, and read that topic as well. Close the Help window.

13. We will now create another Action Document, but this time with a slightly different layout. Click on the 'Additional boxes layout file' list box, and select 'Response Approval 1.doc' (or .docx). In the 'List of recipients' section select 'M Anderson - Process', then press the 'Create Action File' button.

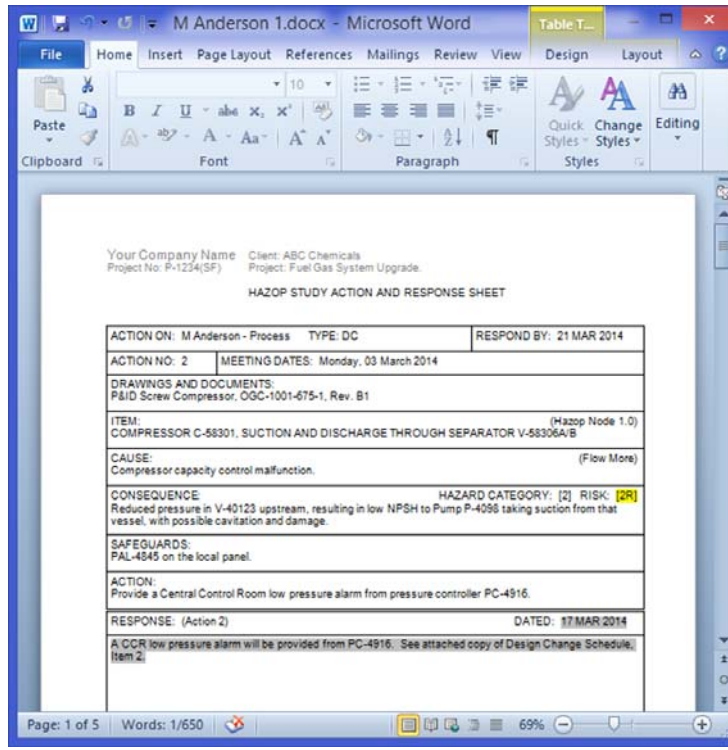
14. Word will be started, and the process described in steps 7 and 8 above will be repeated. Scroll through the new document, and you will see the effect of applying the layout file.

15. Save the new document with the name 'M Anderson 1', but on this occasion, to save time we will leave it open. Switch back to the HAZOP Manager program, and on the 'Create Action Files' dialog press the 'Finished' button. Page through the data file, and you will see that all the actions for Anderson and Temple have had the flag

'(*TTAF*) Transferred to Microsoft Word (Today's Date)' added to the Response box. This indicates to the program that those actions have now been distributed.

16. The two Action Documents that we have just created and saved would be e-mailed to the persons concerned, and they would each extract the attachment to a folder on their computer's hard disc. For the purposes of this exercise, we will assume the role of M Anderson, who now has his Action Document on his computer and is ready to input his responses.

17. Switch back to Word.... 'M Anderson 1.doc' should still be open. Scroll down to the Response section of the displayed Action 2 sheet, and type in the DATED box "17 MAR 2014". In the box below input the text "A CCR low pressure alarm will be provided from PC-4916. See attached copy of Design Change Schedule, Item 2". Leave the SIGNED box empty. The result should appear as illustrated below.



18. Scroll down to Action 9, and type the date "17 MAR 2014", and the response "The requirement for a gas detector is being discussed by Safety Department. No conclusion has yet been reached".

19. Two responses have been input. Assume that M Anderson cannot reply at this time to the other actions assigned to him. We therefore save **and then close** the file. A copy of this file would then be returned as an email attachment to the Study Secretary. The Secretary would extract that returned document into a folder specially created to store such files for the current safety review.

20. We now revert to our role as Study Secretary by switching back to the HAZOP Manager program. From the 'File' menu, select the 'Read Response File' option, and then 'Word format file (*.doc; *.docx)...'. Accept the advisory message about the necessity for Word being currently closed and the desirability of having a backup of your data file by pressing the 'Yes' button.

21. From the File Open dialog displayed, select 'M Anderson 1.doc', and press the 'Open' button. Word will be started, you will see the document being scrolled, and you will be advised that the response update has been completed.

22. Finally, use the  (if necessary) and the  toolbar buttons to visit the response sections of Actions 2 and 9. You will see that the response text has indeed been automatically transferred from the Word Action Document to the data file. Note that the response date in the data file will be the current date. For an explanation of this apparent anomaly and other important aspects of this procedure, start the Help system, type "response" in the Search tab, press 'List topics', and view the entry entitled 'Automatic Input of Word format Action Responses'.

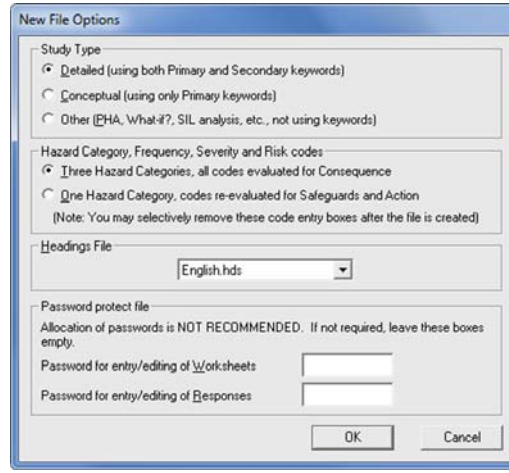
From the above exercise you will have gained an appreciation of how easy it is to distribute actions electronically, and to update your data file with the returned responses. The potential increase in efficiency for a large study would be significant.

Note that if you wish to repeat this exercise, you will need to overwrite the WORDACTS.HDF file from the copy located on the installation CD. Otherwise, the "(*TTAF*) Transferred to etc…" text within that data file will prevent you from creating further Action Documents (the 'List of recipients' box in Step 6 will contain only one name).

TUTORIAL 10: Creating a Data File and Multiple Windows

In this tutorial we will experiment with the procedures that would be used when setting up a data file prior to the start of a review. As there would initially be a significant amount of typing involved in setting up a new study, to reduce this we will be copying and pasting information from EXAMPLE1 into our new file. To achieve this we will have both files open at the same time, and while this is not the primary objective of this tutorial, it would be as well to get used to this potentially useful facility.

1. If necessary, start the HAZOP Manager program, and wait for the title window to close. From the 'File' menu, select 'New' (ALT+F then N), or press the  button on the toolbar.
2. In the 'Create new Study Data File' dialog displayed, name the file 'NewStudy', then press the 'Create' button. The following dialog will appear.

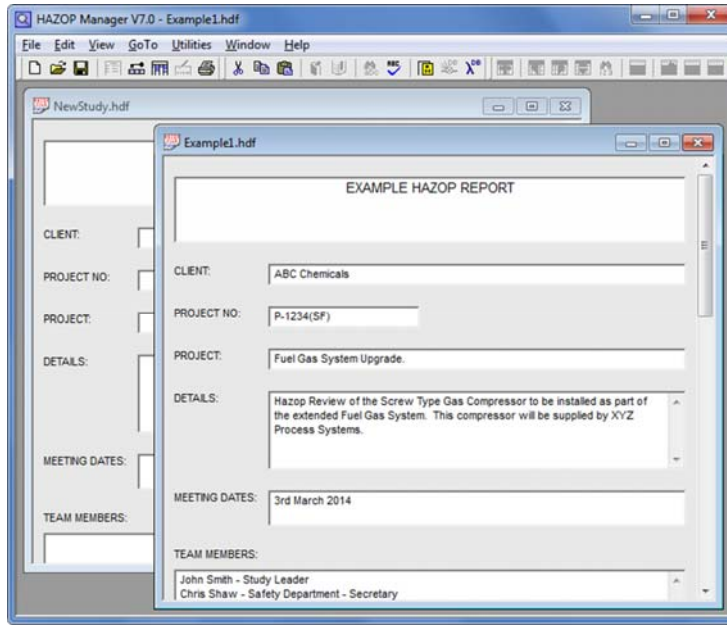


3. Press F1 to display Help on these File Options. After reading the help topic, close the Help window. Ensure that the options are set as illustrated above, i.e. Detailed Study, Three Hazard Categories and an English Headings file, then press OK.

4. We should now be viewing an empty Study Details form. As indicated earlier, we are going to save time by copying some of the information from our EXAMPLE1 file. So, open the EXAMPLE1 file (without closing NEWSTUDY).

5. We now have two files open, but can only see one at the moment. To switch back and forth between the files, click on the appropriate file name in the 'Window' menu. To show both files at the same time, choose 'Cascade' from the 'Window' menu.

6. Both files should now be shown in the main program window. Rearrange them as in the illustration below (important… the input boxes for both files should never be totally obscured, whichever file is currently in the foreground).



7. Highlight the text "EXAMPLE HAZOP REPORT" in the first input box of the EXAMPLE1 file, then copy it either by pressing the button on the toolbar or typing Ctrl+C.

8. Now, place the caret (cursor) in the corresponding field in the NEWSTUDY window and paste the copied text either by pressing the button on the toolbar or typing Ctrl+V.

9. We can also move data around using ‘Drag and Drop’. If you are unfamiliar with the technique of dragging and dropping, find the ‘Drag and Drop editing’ section of the Help file. Once you have read the topic, close the Help window.

10. Highlight the text ‘ABC Chemicals’ in EXAMPLE1 then drag it to the CLIENT field in our new file (left-click with the mouse on the highlighted text, then move the mouse whilst holding the left button down). Don’t release mouse button just yet! We want to copy, rather than move the text, so press the Ctrl key on your keyboard before releasing the button (note the ‘+’ sign that appears).

11. Repeat steps 7 and 8 (or just 10, if you prefer to ‘drag and drop’) for each field on the Study Details form until you get to ACTIONS and ENTRIES. Leave these numeric fields as they are.

12. Maximise the NEWSTUDY file using the  button on its caption bar, then go to the Keywords form by using the  toolbar button (or Alt+G then K).

13. We now see an empty Keywords section. From the ‘Keywords’ menu, choose the ‘Load’ option. Select the ‘Detailed Study.kys’ file, and press OK. The information on each of the tabs in the Keywords section of our file will now have been input automatically.

14. To gain a fuller appreciation of this feature, press the context help  toolbar button, and with the help cursor select the ‘Load’ option just used. When you have completed reading the topic, close the Help window.

15. Go to the Entry form. We will now practice the creation of new Node Headings, ready for the ‘forthcoming study’.

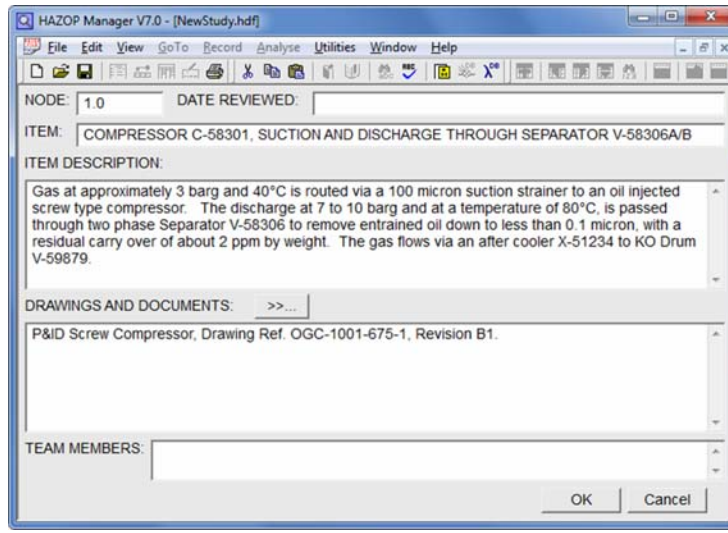
16. Press the  toolbar button (with the **yellow** plus sign, grouped with the other buttons for Node Heading operations).

17. Type “1.0” in the NODE box (without the quotes). In the ITEM box type “COMPRESSOR C-58301, SUCTION AND DISCHARGE THROUGH SEPARATOR V-58306A/B” (also without the quotes). Leave the DATE REVIEWED box empty... that date will be automatically input by the program as soon as we add the first entry to this Node.

18. If you like, you can copy the rest of the information from our existing Node 1.0 in the EXAMPLE1 data file. Switch to the EXAMPLE1 data file by clicking on that file name in the 'Window' menu. Go to Entries and bring up the Heading information for Node 1.0 (try clicking the  toolbar button).

19. Copy and paste, as described earlier, data from the Node 1.0 Heading in EXAMPLE1 to the Node 1.0 heading in our new file (use the 'Window' menu to switch between the files).

20. When you have finished, switch back to the EXAMPLE1 data file and close it. Your screen should look like the one illustrated below.



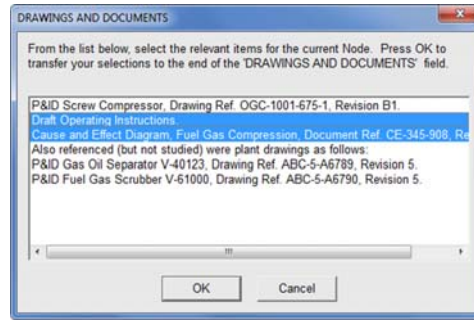
21. Press OK. You will now have returned to the Entries form and should see that the  button on the toolbar is now available. It was previously disabled because we had no Nodes in which to add Entries.

22. To illustrate a couple of additional facilities, create another new Node by selecting 'New Heading' from the 'Record' menu.

23. Type "2.0" in the NODE REF box then tab forward through to DRAWINGS AND DOCUMENTS and press F9. Note that the text from the heading on which we were located before commencing this operation has been automatically repeated.

24. Press F1, click on the Index tab, and type “repeat” in the input box. Double-click on the ‘Repeating text’ topic. You will see that the F9 key can also be employed to save time and effort when creating entries as well as Node headings. Close the Help window.

25. Position the caret at the end of the first line in the DRAWINGS AND DOCUMENTS input box. Press Enter to create a new line, and then press the [>>...] button. The contents of DOCUMENTS STUDIED in the Study Details are listed (remember, we input that data in step 11). We have already used F9 to automatically input the P&ID on the first line. Highlight the following two lines as shown below, and then press OK to copy them to our Node heading.



26. The facility we have just used can be extremely useful, particularly in a large study covering a multitude of drawings and with many Nodes. Finally, complete the current Node by typing any sensible text in both the ITEM and ITEM DESCRIPTION, then press OK.

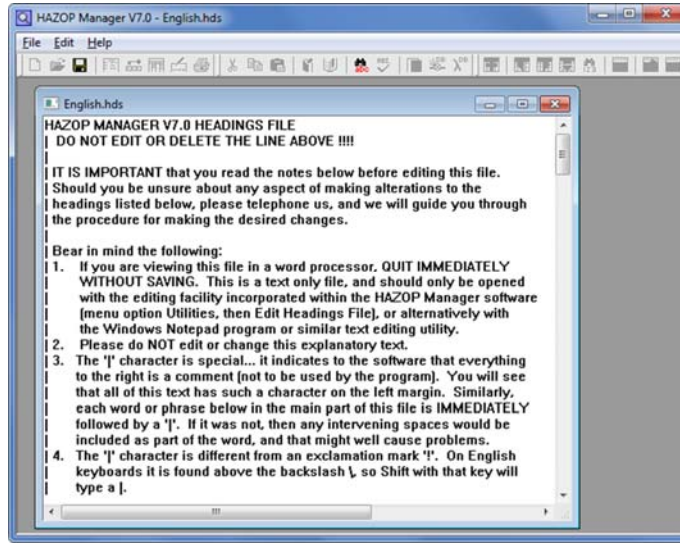
27. Lastly, we will generate an Agenda. By now you should be familiar enough with printing operations to accomplish this without detailed instructions (use menu command File, Print Agenda). For the output format, it would be usual to set the ‘Print to’ option to ‘Word Document’, ‘PDF Document’ or ‘HTML Document’ so that the result can be more easily distributed to study team members.

Planning for a study meeting and setting up a data file is described in the ‘Preparing for a Hazop Study’ Help topic. This outlines not only the software operations involved, but also discusses the overall requirements such as assembling data, marking up drawings, etc. If you have not previously organised a study, then this topic should prove useful in that it will help you to approach the task in a logical and structured manner.

TUTORIAL 11: Alternative Data File Types / Headings Files

In this tutorial we will be creating a data file suitable for a general Risk Assessment study. As the default headings are unlikely to be suitable for such a study, we will instead produce our own customised headings file. Whilst we are creating a new type of data file (i.e. different from the usual detailed Hazop Study layout), we will also take the opportunity to utilise an 'Alternative Risk Assessment' method. The data file we create will be used in the next tutorial, so it is important to complete this exercise before progressing to the next.

1. If necessary, start the HAZOP Manager program, and wait for the title window to close.
2. From the 'Utilities' menu, select 'Edit Headings File' (ALT+U then H).
3. From the standard dialog displayed, open the 'English.hds' file. A window similar to the one below will be displayed.



4. Press F1 to display the Help file, and read the section on Customised Headings Files. Close the Help window, then read the introductory text in the 'English.hds' file before progressing.

5. Because we don't wish our modifications to be saved in the default headings file, from the 'File' menu, choose 'Save As…" and name the file 'GenRisk1' (**this step is important… do it now**, because it is easy to forget if perhaps you are later prompted to save when closing the file).

6. Following the introductory text at the beginning of the file are the headings themselves. The first one we need to modify is the 'DEVIATION' heading. Scroll down the file until you see the word DEVIATION followed by a pipe '|' symbol. Change 'DEVIATION' to 'CONCERN' (without the quotes). Make sure the pipe symbol is still present.

7. Immediately below this line is the 'Deviation' heading (note the difference in type-case). This also needs to be modified. Change the word 'Deviation' to 'Concern' (without the quotes). Make sure the pipe symbol is still present. This part of the file should appear as shown below:

   …

Entry Number|	Analysis window
CONCERN|	Entry window - Print Minutes, Analysis
Concern|	Analysis window
CAUSE|	Entry window - Print Minutes, etc…

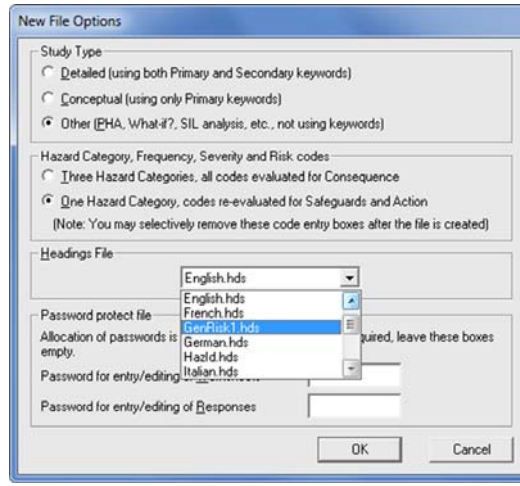
   …

8. Now, locate the heading 'NODE' and replace it with 'PLANT SECTION'. Replace 'Hazop Node' with 'Plant Section'. Replace 'Node Number and Item' with 'Plant Section and Item'. (Hint: scroll to the top of the file, click anywhere on the first few lines, use 'Find' from the 'Edit' menu to locate the text 'Node', and pressing the 'Find Next' three times will take you to those three headings.).

9. Save the modified Headings file using the 'Save' option from the 'File' menu, or by pressing the  button on the toolbar. Then, close the headings file.

10. Now we need to create a new data file that will incorporate the modified headings that we have just generated. From the 'File' menu, select 'New' (ALT+F then N), or press the  button on the toolbar.

11. In the ‘Create new Study Data File’ dialog, name the file ‘GenRisk1’, then press the Create button. The ‘New File Options’ dialog will be displayed.



12. In this dialog, select the ‘Other’ Study Type option, the ‘One Hazard Category’ option and, from the Headings File list, select GenRisk1.hds. This operation is illustrated above.

13. Press F1 to display Help for this dialog, and using the blue hyperlink, navigate to the ‘Alternative Risk Assessment Methods’ topic. Once you have read this, close the Help system and press OK to create the file.

14. At the top of the Study Details section displayed, type in the title ‘GENERAL RISK ASSESSMENT REPORT’. Leave the rest of the fields blank to save time.

15. Go to the Keywords section of the file (ALT+G then K), and load the ‘HazId Study.kys’ keywords file (ALT+K then L).

16. Go to the Entries section of the file (ALT+G then E). Notice that, rather than DEVIATION being the first column, it is now called CONCERN. Similarly, where we used to see the heading NODE, we now see PLANT SECTION. This is a result of us using our modified headings file. Notice also that because we chose the ‘One Hazard Category’ Risk Assessment method when we created the file, Frequencies and Severities appear beneath the Consequence, Safeguards and Action columns.

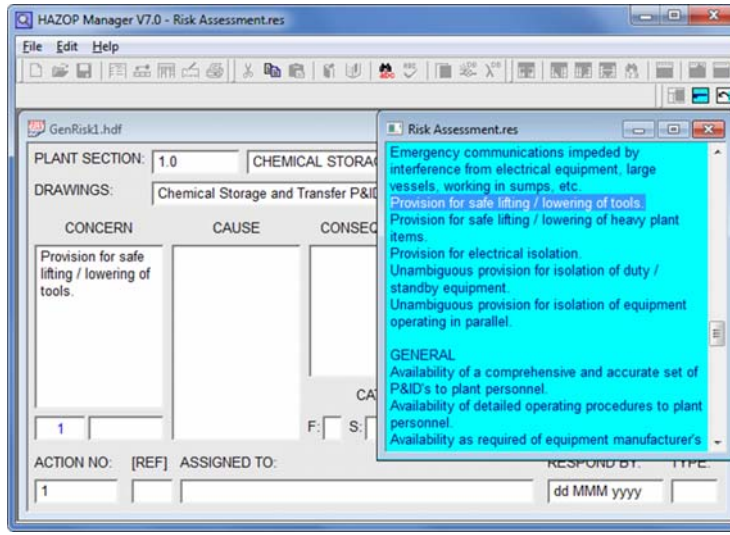
17. Before we can start entering our study data, we must first create at least one Node, so press the  button on the toolbar to bring up the New Heading form.
18. In the PLANT SECTION field, type “1.0”, in the ITEM field type “CHEMICAL STORAGE AND TRANSFER”, and in the DRAWINGS AND DOCUMENTS field type “Chemical Storage and Transfer P&ID 060-33-T-D0002, Rev 3”. Press OK to save the new heading to the file.

Having selected the ‘Other’ study type option, and having modified and loaded the GenRisk1 headings file, in this exercise you have produced a data file that is formatted for the recording of a General Risk Assessment. Armed with this basic understanding that choosing different file layout options and modifying headings files can be used to accommodate a range of different reviews, you will now be able to create customised data files for differing types of study.

TUTORIAL 12: Resource Files / Alternative Risk Assessment

In this tutorial we will be using a Resource file to help with a General Risk Assessment Study. In addition to this, an alternative risk assessment method will be demonstrated. We will need to use the data file created in Tutorial 11, so if you have not yet completed that tutorial, please do so before commencing this exercise.

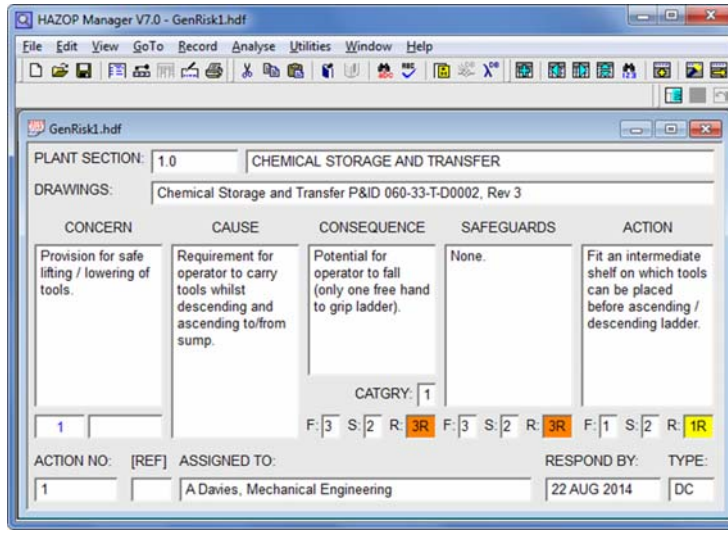
1. If necessary, start the HAZOP Manager program, and wait for the title window to close.
2. Before we start creating entries, select the 'Edit Resource File' option from the 'Utilities' menu and Open the 'Risk Assessment.res' file. Press F1 and read the help topic displayed. When finished, close the Help window and then close 'Risk Assessment.res'.
3. Open the GenRisk1.hdf data file and navigate to the Entries form.
4. From the 'View' menu, select 'Resource File', and in the standard dialog displayed, open 'Risk Assessment.res' again.
5. 'Risk Assessment.res' will now appear in a blue window on top of the current entry. Notice also, the new buttons that have been added to the right-hand end of the toolbar  . These will be used to transfer data from the Resource file to the current entry. Click anywhere on the data file window and press the  button to add a new entry.
6. Press the  button on the toolbar to display the Resource file again. Then, either from the 'Edit' menu or by right-clicking with the mouse in the Resource file, select the 'Find' option.
7. In the 'Find' dialog, type in "tools" (without the quotes) and press the 'Find Next' button. Once the word 'tools' has been located, press Cancel.
8. We should now be looking at the sentence 'Provision for safe lifting / lowering of tools'. To transfer this sentence to the entry, press the  toolbar button to select the current paragraph, followed by the  toolbar button to transfer the paragraph to the entry. This operation is illustrated on the next page.



9. In the CAUSE column, type “Requirement for operator to carry tools whilst descending and ascending to/from sump”.
10. In the CONSEQUENCE column, type “Potential for operator to fall (only one free hand to grip ladder)”.
11. Tab to the CATGRY field and type “1” to represent Personnel Injury.
12. Tab to the F (Frequency) field, right-click to display Frequency Codes and select ‘3 – Once per year’.
13. Tab to the S (Severity) field and type “2” to represent a Major consequence. Note that the ‘R’ (Risk) value has been automatically assessed and input by the program based on the values contained in the Risk Matrix (Keywords view). Remember, that you could have right-clicked in either the CATGRY or S field to view the Severity Matrix, from which you could have selected your codes.
14. In the SAFEGUARDS column, type “None”.
15. Because the safeguards neither alter severity nor frequency, duplicate the previous Frequency (3) and Severity (2) in the appropriate fields below the SAFEGUARDS column.
16. In the ACTION column, type “Fit an intermediate shelf on which tools can be placed before ascending / descending ladder”.

17. As this would serve to reduce the frequency of falls by the operator, but not the severity of a fall, in the F (Frequency) field below the ACTION column, type “1” and in the S (Severity) field below the ACTION column, type “2” (as before). Notice that the risk has been recalculated based on the likely benefit of completing the action.

18. In the ASSIGNED TO field, type “A Davies, Mechanical Engineering”, and ask that the Action Response be completed by 22 AUG 2014. Finally. in the TYPE box input “DC” for Design Change. The completed entry should be similar to that which is illustrated below.



19. Press the  button to add another record, then press the  button on the toolbar to display the Resource file again.

20. Three paragraphs below the one we just transferred is the following sentence ‘Unambiguous provision for isolation of duty / standby equipment’. Put the caret (cursor) anywhere in this sentence and press the  toolbar button to select the paragraph followed by the  toolbar button to transfer the paragraph to the entry.

21. In the CAUSE column, type “To provide redundancy, both local panels can run either the duty or standby pump”.

22. In the CONSEQUENCE column, type “Electrical isolation not achieved due to operator misunderstanding. Potential injury or fatality during maintenance”.
23. Tab to the CATGRY field and right-click to bring up the Severity Matrix. Double click to select the cell that contains the text ‘Permanent disability, perhaps one fatality’. Press OK in the Severity Matrix so that the Hazard Category and Severity codes can be transferred to the entry.
24. In the F (Frequency) field, right-click to display Frequency Codes and select ‘3 – Once per year’.
25. In the SAFEGUARDS column, type “General maintenance procedures require verification of electrical isolation”.
26. The effect of the safeguards is to reduce the frequency of this sequence of events, so in the F (Frequency) field below the SAFEGUARDS column, type “2” and in the S (Severity) field below the SAFEGUARDS column, type “3”.
27. In the ACTION column, type “Include in procedures comprehensive details for ensuring electrical isolation of these particular pumps/panels”.
28. Since this would serve to reduce the frequency of this hazardous event, but not the severity, in the F (Frequency) field below the ACTION column, type “1” and in the S (Severity) field below the ACTION column, type “3” (as before).
29. In the ASSIGNED TO field, type “L Burrows, Operations”, in the RESPOND BY box press F9 (Function Key 9) to repeat the date 22 AUG 2014, and finally type “O&M” in the TYPE box to indicate an update to the Operations & Maintenance Manual.

In this tutorial we have employed an alternative Risk Assessment method, and used a Resource file to prompt input and also to save time in typing in the ‘CONCERN’ column. The potential applications for Resource files are many. It is up to you to consider when and how best you can use them. You can, of course create your own Resource files either in a plain text editor such as Windows Notepad (remembering that it must have the file extension “.res”), or preferably in HAZOP Manager’s special utility which can be found by selecting ‘New Resource File’ from the ‘Utilities’ menu in the HAZOP Manager program’s main window.

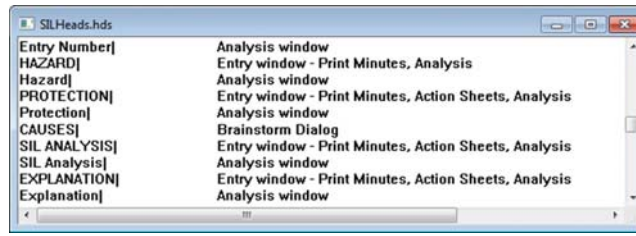
TUTORIAL 13: SIL Analysis

In this tutorial we will briefly explore SIL Analysis. This will involve modifying a headings file, looking at a resource file and creating a data file, as well as some data entry. You will need some knowledge of these steps, so it would be advantageous to have completed the previous tutorials.

1. If necessary, start the HAZOP Manager program, and wait for the title window to close.
2. From the 'Utilities' menu, select 'Edit Headings File' (ALT+U then H).
3. From the standard dialog displayed, open the 'English.hds' file.
4. As we don't want our modifications to be saved in the default headings file, from the 'File' menu, choose 'Save As…" and name the file 'SILHeads'.
5. Find the following headings and modify them with the text indicated below:

Change	DEVIATION	to	HAZARD
	Deviation	to	Hazard
	CAUSE	to	PROTECTION
	Cause	to	Protection
	CONSEQUENCE	to	SIL ANALYSIS
	Consequence	to	SIL Analysis
	SAFEGUARDS	to	EXPLANATION
	Safeguards	to	Explanation

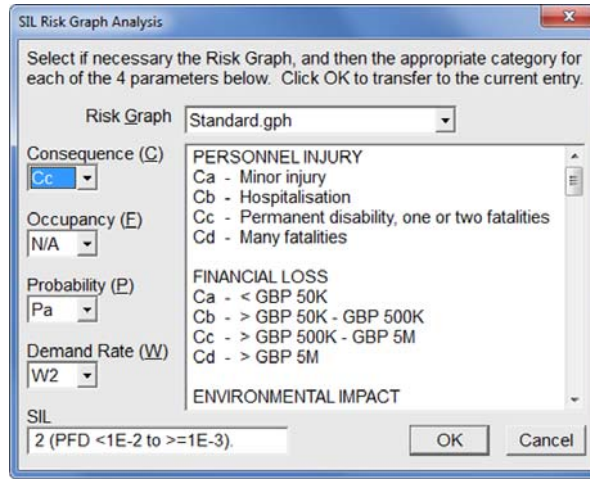
The section of the file that you have modified should appear as illustrated below.



6. Save the modified Headings file using the 'Save' option from the 'File' menu, or by pressing the  button on the toolbar. Then, close the headings file.
7. Now, let us look at one of the resource files used during SIL Analysis. From the 'Utilities' menu, select 'Edit Resource File', and choose 'SIL-C.res' from the dialog displayed.
8. You should see a text file containing guidance on how to choose Consequence categories during SIL Analysis. You could edit this file to take account of your company's specific guidelines. However, that is not part of this exercise, so simply close the 'SIL-C.res' file.
9. Create a new data file (CTRL+N) called 'SIL Analysis1.hdf'.
10. In the 'New File Options' dialog, select the 'Other' study type and select 'SILHeads.hds' (not to be confused with 'SIL_5.hds' or 'SIL_6.hds') from the list of available Headings Files. Press OK to create the file.
11. At the top of the Study Details section displayed, type in the title "SIL ANALYSIS REPORT". Leave the rest of the fields blank to save time.
12. Go straight to the Entries section of the file (ALT+G then E). Notice the new column headings that have been loaded from our SILHeads file.
13. We don't need Frequencies, Categories, Severities or an Action Code for this type of study, so we should hide them. To do this, click on the 'View' menu and uncheck Frequency, Category and Severity, then select 'Action Codes' and set it to '0 - None'.
14. Before we can start entering our analysis, we must first create a Node. Press the  button on the toolbar to bring up the New Heading form.
15. In the NODE field, type "1.0", in the ITEM field type "GAS CONDITIONING SYSTEMS", and in the DRAWINGS AND DOCUMENTS field type "P&ID Glycol Contactor 345-A3-568-RT, Rev D". Press OK to save the new Node heading to the file.
16. Press the  button to add a new record. Then, in the HAZARD column, type "High pressure gas breakthrough from contactor to Regeneration Systems, caused by LCV-456 sticking open".

17. In the PROTECTION column, type “LAL-457. LALL-458.”.

18. Tab to the SIL ANALYSIS column, and either press the  toolbar button, or select ‘SIL Risk Graph Analysis’ from the ‘Record’ menu (ALT+R then L). The following dialog will be displayed.



19. Press F1 to view the Help system’s entry about SIL Analysis. Once you have read this topic, close the Help window. Click on the ‘Consequence’ dropdown list and select Cc, to represent a considerable financial loss.

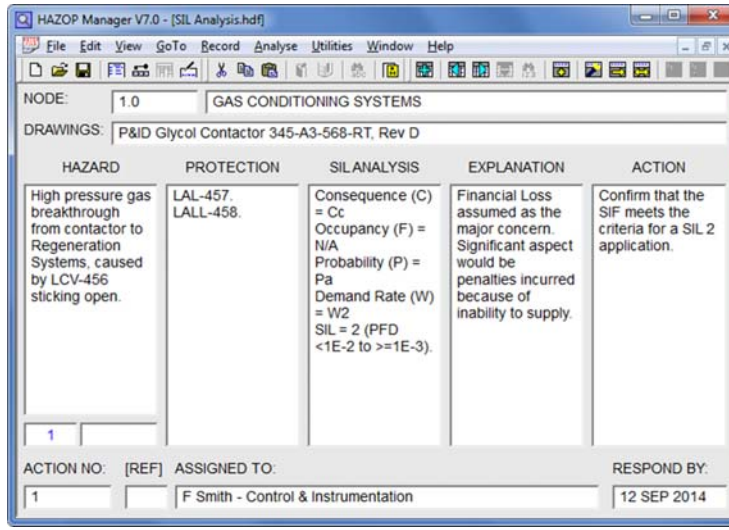
20. Occupancy is not relevant in terms of Financial Loss, so choose N/A from the Occupancy list.

21. Tab to the Probability list and select Pa, then select W2 from the Demand Rate List.

22. The SIL is then calculated by the Program and appears in the SIL field at the bottom of the dialog. To transfer this analysis to the current entry, press OK.

23. Now, tab to the EXPLANATION column and type the following text “Financial Loss assumed as the major concern. Significant aspect would be penalties incurred because of inability to supply”.

24. Finally, let us assign an Action to “F Smith – Control & Instrumentation” to “Confirm that the SIF meets the criteria for a SIL 2 application”. Ask that she responds by 12 SEP 2014. Your completed entry should appear as illustrated on the next page.



By choosing to create our data file with the 'Other' Study Type and loading into it our modified headings, we have created a file suitable for recording a SIL Analysis. For an alternative set of suggested headings for SIL Analysis, you could refer to the Help system. You should by now have an understanding of the flexibility that modifying headings files can provide in terms of the numerous types of study that can be carried out using the HAZOP Manager software.

TUTORIALS - Summary

With the series of tutorials in the previous pages you will have used the more significant features and facilities within the HAZOP Manager program. More importantly, we trust that you will now be confident enough to explore and practice on your own, not only the operations already covered, but those that have not even been touched upon.

During the course of the exercises, on many occasions you will have seen menu options that have not so far been used, and perhaps wondered what their purpose was and how they actually operated. Now is the time to find out, because it is important to know how you can get the most out of the software. Such information might prove to be extremely useful if, for example, in the middle of a study meeting you need to copy a series of entries from one Node to another (Utilities - Copy Entry!).

Remember that there are two sources of Help. The on-line variety provided by the Help system you have already extensively used, and by now you should be able to locate any subject covered within that system. However, if a search of the Help file does not produce the answer you are seeking, you may always telephone or e-mail us with your query. We cannot promise that we will always solve the problem. However, experience has shown that sometimes seemingly intractable predicaments can be resolved by the application of what could be considered a devious and undocumented sequence of operations.

Finally, do not forget to use Windows Explorer to overwrite the hard disk EXAMPLE1.HDF and WORDACTS.HDF files with those from the DATA sub-directory on the HAZOP Manager Installation CD-ROM. If necessary, delete also the Action Documents created in Tutorial 9. In this way any colleague wishing to use the tutorials will not be confused by the changes you have made.